Making sense of supply chain management in UK construction organisations: theory versus practice

This item was submitted to Loughborough University's Institutional Repository by the/an author.

Additional Information:

- A Doctoral Thesis. Submitted in partial fulfillment of the requirements for the award of Doctor of Philosophy of Loughborough University.

Metadata Record: https://dspace.lboro.ac.uk/2134/7740

Publisher: © Scott Fernie

Please cite the published version.
This item is held in Loughborough University’s Institutional Repository (https://dspace.lboro.ac.uk/) and was harvested from the British Library’s EThOS service (http://www.ethos.bl.uk/). It is made available under the following Creative Commons Licence conditions.

For the full text of this licence, please go to: http://creativecommons.org/licenses/by-nc-nd/2.5/
Making sense of supply chain management in UK construction organisations: theory versus practice

submitted by

Scott Fernie

A Doctoral thesis submitted in partial fulfilment of the requirements for the award of Doctor of Philosophy of Loughborough University

24th February 2005

© Scott Fernie
Abstract
Supply chain management is one of the newest and most fashionable managerial concepts to be sponsored by those organisations responsible for setting the change agenda in the construction sector. Its success elsewhere, its promise of productivity improvement and 'best practice' pedigree form the basis of arguments for its adoption in the construction sector. There are a number of assumptions that underpin this argument that are largely ignored by the promoters of such change and the construction management research community. Most notably, the transferability and utility of supply chain management in the context of organisations competing in the construction sector. However, it is argued in this thesis that these arguments fail to engage with the recursive relationship between context and practice. Managerial practice does not exist in a vacuum. The research therefore sets out to test the theory of supply chain management in the construction sector. In doing so, the research approach is informed by and draws on contextual approaches that are highly sensitive to the recursive relationship between context and practice. A multiple case study research strategy was chosen that sought to provide explanations for how practitioners make sense of supply chain management in the context of their organisations and forms the basis of theory testing. These explanations also provided a wealth of empirical evidence to test the assumptions that underpin calls for change in the construction sector. It is concluded that supply chain management does not make sense in the construction sector and that calls for its adoption lacked intellectual rigour and were indeed acontextual.

Keywords: Supply chain management; Structuration theory; Context and practice; organisational strategy; operational efficiency; best practice; movement for change
Acknowledgements

This thesis has been 'a long time coming' as they say and has benefited significantly from this lengthy process. My thoughts on the subject matter of construction management research began back in 96' under the expert tutelage of Professor John Kelly and Professor Steve Male. My thanks go to them for my early exposure to the research community and the research process. I learned a number of important lessons that have stood me in good stead during the writing of this thesis and in becoming more involved in the research community.

John and Steve then shuffled me off to Professor Tony Thorpe, Professor Andrew Baldwin and Professor Simon Austin for a 'tour de force' education in conducting highly collaborative research with industry focused on change. It is at Loughborough where my thoughts surrounding change in the construction sector and in particular supply chain management began to crystallise. Early thoughts regarding the content of this thesis were instrumental in shaping the style and arguments presented in the thesis. My thanks therefore go to Tony, Andrew and Simon for allowing me the opportunity to work in an environment that provided so much support and exposure. I learned significant lessons regarding the difficulties facing practitioners in mimicking the rhetoric of change emanating from, what is called in this thesis, 'the movement for change'.

From Loughborough, I was given the opportunity to move to Reading University to work with Professor Stuart Green. Here, I found all previous held beliefs regarding construction management research vigorously challenged. As some of my previous colleagues remarked at the time, I had moved to 'the dark side'. The analogy aside, I found working at Reading more suited to my particular thoughts on change in the construction sector. It is at Reading that I have matured significantly as an academic researcher. My thanks go to Stuart for bringing me to Reading and adding to my education and skills as a researcher. The
thesis is also significantly laden with many of the thoughts that evolved during this period from much reflection and challenge. In particular, my stance as a critical researcher is heavily imprinted on the content of this thesis.

During all this time I have been supported, cajoled, bullied, harassed and loved by my family. This last 6 years have not been easy for Debs and the children (Calum, Robert and Louise). They have had to endure ME and my PHD for probably longer than most families’ patience would allow. I can only presume that once this is submitted I will return to being the perfect husband and father! My especial thanks therefore go to Deb, Calum, Robert and Louise.

This brings me to my penultimate ‘thanks’. This is a broad one and goes to a long list of supporters I have benefited from during the time it has taken for this thesis to emerge: Steph Weller – for listening to my arguments over and over again; Roine Leiringer – for proof reading and challenging the content; Robert Newcombe – for being supportive; Dave Root – for planting particular thoughts in my head; Chris Carter – just for being a good mate and rarely asking that dreaded question ‘how’s the PhD going Scott?’ and; Derek Thomson – for listening to my arguments and supporting the content.

My last thanks go once again to Tony Thorpe. Few supervisors would have endured the shifts in direction this thesis has taken during my evolution as a researcher. Tony has always been supportive and is never short of soft metaphors and analogies when something difficult had to be said about the content, style, format and arguments presented in this thesis. Thanks Tony.
# TABLE OF CONTENTS

## CHAPTER 1 - DEFINING THE RESEARCH PROBLEM

1.1 The Importance of the UK Construction Sector ..................................................... 1
1.2 The Movement for Change ...................................................................................... 1
1.2.1 Industry reviews ............................................................................................... 3
1.2.2 Perceived performance and aspirations: a chasm ............................................. 4
1.2.3 Reiterating familiar concerns .......................................................................... 6
1.3 The Introduction of Supply Chain Management to the Construction Sector ...... 7
1.4 Framing the Research ........................................................................................... 9

## CHAPTER 2 - CONTEXTUAL APPROACHES

2.1 Introduction ......................................................................................................... 20
2.2 Calls for Change in the Construction Sector: Critical Reflections .................... 20
2.2.1 Context stripping ............................................................................................. 21
2.2.2 Challenging best practice ............................................................................... 22
2.2.3 Context and practice ....................................................................................... 24
2.3 A Review of Contextual Approaches .................................................................. 26
2.4 Structuration Theory ............................................................................................. 27
2.4.1 Overview ........................................................................................................... 29
2.4.2 The process of structuration .......................................................................... 30
2.4.3 Knowledgeable and reflexive actors ............................................................... 33
2.4.4 Structuration versus Institutional Theory ....................................................... 34
2.5 Contextual Approaches and organisation studies ............................................... 35
2.5.1 Contextualism and entrepreneurship ............................................................. 36
2.5.2 The contextualisation of organisational learning .......................................... 38
2.5.3 Processual analysis and contextualism ......................................................... 39
2.5.4 Context and ‘continuity and change’ ............................................................ 41
2.5.5 The structuration of collaboration ............................................................... 44

## CHAPTER 3 - OVERVIEW OF SUPPLY CHAIN MANAGEMENT

3.1 Introduction ......................................................................................................... 53
3.2 The Importance of Supply Chain Management .................................................. 53
3.3 Historical Development ....................................................................................... 54
3.4 Definitions ............................................................................................................ 55
3.5 Overview ............................................................................................................. 58
3.5.1 The development of supply chain management: Academic theorising or praxis? 59
3.5.2 The importance of industry structure ............................................................. 60
3.5.3 Understanding fads ....................................................................................... 62
3.5.4 The influence of globalisation ...................................................................... 63

## CHAPTER 4 - BROAD THEORETICAL PERSPECTIVES OF SUPPLY CHAIN MANAGEMENT

4.1 Introduction ......................................................................................................... 68
4.2 Broad Strategic and Operational Views ............................................................... 68
4.3 Perspectives that Form a Strategic View ............................................................. 69
4.3.1 Alignment ....................................................................................................... 70
4.3.2 Strategic Procurement Management .............................................................. 71
4.4 Perspectives that Form an Operational View ..................................................... 73
4.4.1 Logistics ....................................................................................................... 74
4.4.2 Purchasing and supplier management ........................................................... 83
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>CHAPTER 5 – DEVELOPMENT OF SUPPLY CHAIN MANAGEMENT IN CONSTRUCTION</td>
<td>98</td>
</tr>
<tr>
<td>5.1</td>
<td>INTRODUCTION</td>
<td>98</td>
</tr>
<tr>
<td>5.2</td>
<td>BROAD OVERVIEW</td>
<td>99</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Holistic thinking and networks</td>
<td>101</td>
</tr>
<tr>
<td>5.2.2</td>
<td>The clients’ role</td>
<td>102</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Context</td>
<td>103</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Context as barrier to supply chain management</td>
<td>105</td>
</tr>
<tr>
<td>5.3</td>
<td>DOMINANT PERSPECTIVES OF SUPPLY CHAIN MANAGEMENT IN CONSTRUCTION</td>
<td>108</td>
</tr>
<tr>
<td>5.3.1</td>
<td>A systems engineering approach</td>
<td>108</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Building down barriers</td>
<td>112</td>
</tr>
<tr>
<td>5.4</td>
<td>CHAPTER SUMMARY</td>
<td>122</td>
</tr>
<tr>
<td>6</td>
<td>CHAPTER 6: METHODOLOGY AND RESEARCH DESIGN</td>
<td>125</td>
</tr>
<tr>
<td>6.1</td>
<td>INTRODUCTION</td>
<td>125</td>
</tr>
<tr>
<td>6.2</td>
<td>ALTERNATIVE KNOWLEDGE CLAIMS OR PARADIGMS OF INQUIRY</td>
<td>125</td>
</tr>
<tr>
<td>6.2.1</td>
<td>Typology of Inquiry Paradigms and knowledge claims</td>
<td>128</td>
</tr>
<tr>
<td>6.2.2</td>
<td>The researcher as a paradigm of inquiry</td>
<td>129</td>
</tr>
<tr>
<td>6.2.3</td>
<td>Incommensurability</td>
<td>131</td>
</tr>
<tr>
<td>6.2.4</td>
<td>Accepted paradigm of inquiry</td>
<td>132</td>
</tr>
<tr>
<td>6.3</td>
<td>METHODOLOGY</td>
<td>133</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Research methods: avoiding gross misfit</td>
<td>135</td>
</tr>
<tr>
<td>6.3.3</td>
<td>Case study research design</td>
<td>143</td>
</tr>
<tr>
<td>6.4</td>
<td>CHAPTER SUMMARY</td>
<td>168</td>
</tr>
<tr>
<td>7</td>
<td>CHAPTER 7 – CASE STUDY ANALYSIS AND FINDINGS</td>
<td>171</td>
</tr>
<tr>
<td>7.1</td>
<td>INTRODUCTION</td>
<td>171</td>
</tr>
<tr>
<td>7.2</td>
<td>CASE STUDY 1</td>
<td>171</td>
</tr>
<tr>
<td>7.2.1</td>
<td>Background and context</td>
<td>171</td>
</tr>
<tr>
<td>7.2.2</td>
<td>Proposition 1</td>
<td>173</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Proposition 2</td>
<td>175</td>
</tr>
<tr>
<td>7.2.4</td>
<td>Summary</td>
<td>182</td>
</tr>
<tr>
<td>7.3</td>
<td>CASE STUDY 2</td>
<td>184</td>
</tr>
<tr>
<td>7.3.1</td>
<td>Background and context</td>
<td>184</td>
</tr>
<tr>
<td>7.3.2</td>
<td>Proposition 1</td>
<td>185</td>
</tr>
<tr>
<td>7.3.3</td>
<td>Proposition 2</td>
<td>187</td>
</tr>
<tr>
<td>7.3.4</td>
<td>Summary</td>
<td>194</td>
</tr>
<tr>
<td>7.4</td>
<td>CASE STUDY 3</td>
<td>196</td>
</tr>
<tr>
<td>7.4.1</td>
<td>Background and context</td>
<td>196</td>
</tr>
<tr>
<td>7.4.2</td>
<td>Proposition 1</td>
<td>197</td>
</tr>
<tr>
<td>7.4.3</td>
<td>Proposition 2</td>
<td>198</td>
</tr>
<tr>
<td>7.4.4</td>
<td>Summary</td>
<td>205</td>
</tr>
<tr>
<td>7.5</td>
<td>CASE STUDY 4</td>
<td>207</td>
</tr>
<tr>
<td>7.5.1</td>
<td>Background and context</td>
<td>207</td>
</tr>
<tr>
<td>7.5.2</td>
<td>Proposition 1</td>
<td>208</td>
</tr>
<tr>
<td>7.5.3</td>
<td>Proposition 2</td>
<td>209</td>
</tr>
<tr>
<td>7.5.4</td>
<td>Summary</td>
<td>218</td>
</tr>
<tr>
<td>7.6</td>
<td>CASE STUDY 5</td>
<td>219</td>
</tr>
<tr>
<td>7.6.1</td>
<td>Background and context</td>
<td>219</td>
</tr>
<tr>
<td>7.6.2</td>
<td>Proposition 1</td>
<td>220</td>
</tr>
<tr>
<td>7.6.3</td>
<td>Proposition 2</td>
<td>221</td>
</tr>
<tr>
<td>7.6.4</td>
<td>Summary</td>
<td>229</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1: Porters Five Forces Model of industry Competitiveness ................................................. 9
Figure 2: Principal aim and main components of thesis ............................................................... 15
Figure 3: Map of the case study research strategy ........................................................................ 19
Figure 4: Simplistic representation of Structuration Theory ......................................................... 30
Figure 5: The analytical elements of the process of structuration .................................................. 31
Figure 6: Outcome emerges from a process of interaction between entrepreneur and context.... 37
Figure 7: A structurationist model of organisational learning (adapted from Berends et al. 2003) .. 38
Figure 8: Framework for a contextualist approach for understanding organisational change....... 42
Figure 9: Collaborative processes shape and are shaped by institutional fields (adapted from Phillips et al. 2000) ................................................................................................................ 46
Figure 10: Framework for a contextualist approach for understanding organisational change..... 51
Figure 11: Classification of literature according to two epistemological dimensions (adapted from Croom et al. 2000) ........................................................................................................ 58
Figure 12: Broad concerns and issues arising from the supply chain management literature..... 66
Figure 13: Factors contributing to choice of relational form (adapted from Spekman et al. 1998) .... 73
Figure 14: Three phases of integrating the supply chain............................................................... 77
Figure 15: Customer/Supplier Dependence Grid (adapted from Scott and Westbrook 1991) .... 80
Figure 16: Strategic and operational theoretical perspectives on supply chain management ...... 94
Figure 17: Key aspects of supply chain management ................................................................... 96
Figure 18: Cluster model of project organization (adapted from (Holti et al. 2000)................... 115
Figure 19: The three interrelated ICD principles ................................................................ ....... 119
Figure 20: The content of supply chain management theory ...................................................... 124
Figure 21: Scheme for analysing the assumptions of the social sciences (adapted from Burrell and Morgan 1979)............................................................................................................... 129
Figure 22: Broad theoretical framework informing the propositions ........................................... 145
Figure 23: Multiple case study design (Yin 1994) ........................................................................ 152
Figure 24: Case study research strategy and methodology ......................................................... 170

LIST OF TABLES

Table 1: Modes of theorizing structure and agency (adapted from Bryant and Jary 2001) .......... 28
Table 2: Typical problems of implementing inventory management systems across the supply chain ........................................................................................................ 83
Table 3: Barriers to the integration of sub-contractors ................................................................. 106
Table 4: Characteristics of each end of the relationship continuum ........................................... 120
Table 5: Research methods comparison (adapted from Yin 1994) .............................................. 142
Table 6: Basis for case selection ................................................................................................. 156
Table 7: Case study 1 informant's details ................................................................................... 172
Table 8: Case study 2 informant's details ................................................................................... 185
Table 9 Case study 3 informants' details .................................................................................... 197
Table 10: Case study 4 informant's details ................................................................................... 207
Table 11: Case study 5 informant's details ................................................................................... 220
Table 12: Literal replication from the cross-case analysis .......................................................... 231
Table 13: Literal replication from the cross-case analysis of proposition 1 ............................... 232
Table 14: Literal replication from the cross-case analysis of proposition 2 ............................... 234
CHAPTER 1 – DEFINING THE RESEARCH PROBLEM

1.1 The importance of the UK construction sector
The importance of the construction industry sector within the UK economy is reflected in the fact that it represents a considerable portion of the UK gross domestic product (GDP) and the equally impressive size of its labour force (DTI 2003a; 2003b; Hillebrandt 1984; Hillebrandt et al. 1995; NEDO 1976). The argument that the construction industry is used as an economic regulator by the government lends weight to its perceived importance (See Ball 1988; Hillebrandt et al. 1995 and; Powell 1996). Any efforts therefore to improve the efficiency and effectiveness of the construction industry should have a visible impact upon the UK economy as a whole. Similarly, any programme of investment or withdrawal of resources in the UK construction sector by the Government impacts the economy. The sector clearly represents a significant part of the UK economy or what is commonly referred to as the ‘knowledge economy’ (DTI 1998; Fernie et al. 2003a). Calls for change to improve the productivity of the sector are therefore understandable in this wider context.

1.2 The movement for change
An assumption that ambitious productivity targets can and should be achieved in the construction sector is a central theme running through recent reviews of the construction sector (e.g. Rethinking Construction 2002; Strategic Forum for Construction 2002; DETR 1998; Latham 1994; NAO 2001). This assumption is further emphasised in a body of supporting literature (Bennett and Jayes 1998; Childerhouse et al. 2003; Cain 2003; 2004; Fairclough 2002; Kagioglou et al. 2001). Underpinning this assumption is a broad recognition of consistently higher performance in other sectors (notably the automobile sector) and pockets of higher project performance within the construction sector. This higher performance is in part assumed to be attributable to the use of best practice recipes such as supply chain management. An allegiance to best
practice is therefore central to the interest groups that constitute the contemporary movement for change within the construction sector.

Calls for change within the construction sector are widely supported and gaining momentum within the industry. Previous coordinated change in the sector between the introduction of the NEDO reports (1983; 1988) and the Latham report (1994) has been captured by Winch (2000). Much of the development, detail and drive within the contemporary movement for change is however captured within:

1. The Latham report (Latham 1994);
2. A significant rise of client power in the industry via the establishment of a construction task force (CTF) in 1997 by John Prescott and Nick Raynsford (see Murray 2003);
3. The CTF’s widely cited *Rethinking Construction* report (DETR 1998)
4. Its relatively recent sequel the *Accelerating Change* report (Strategic Forum for Construction 2002);
5. The *Better Public Buildings* report (Finch 2000);
7. The *Modernising Construction* report (NAO 2001);
8. The *Improving Public Services through better construction* report (2005)
9. The establishment of Constructing Excellence (see Woudhuysen and Abley 2004)

The overall coordination of this change now lies predominantly with Constructing Excellence (CE) and brings together previously independent organisations such as Rethinking Construction, Construction Best Practice and the Movement for Innovation. Despite this consolidation, Woudhuysen and Abley’s (2004) understanding of organisations such as Constructing Excellence still points at significant problems inherent in these organisations:
"The obscurantist interdependency of the quango crocodiles works against the awkward truth being told – that the construction industry is not being rethought so much as meditated upon and massaged. Yet as successive governments have contracted out policy making on construction and the environment, the quangos' reach has grown at the same rate as their intellectual rigour has declined." (Woudhuysen and Abley 2004 p. 121)

Woudhuysen and Abley’s (2004) criticism also resonates with similar concerns iterated elsewhere within the construction management literature (Green 2003; 2002). Notably, these authors challenge the intellectual rigour of calls for change from organisations such as CE. They are however largely responsible for the introduction of management initiatives throughout the construction sector and have been given considerable support from government departments in the past. Part of this thesis critiques this contemporary movement for change. The need for such a critique is not to dismiss the movement for change but to present an alternative perspective on the relevance of supply chain management to organisations competing within the construction sector.

1.2.1 Industry reviews
Large repeat clients' ongoing commitment to regularly procure from the sector is reflected in the change agenda and reveals a motive that is driven by more than altruism. Despite this bias, or perhaps because of it, their dissatisfaction with the sector's performance is all too familiar to a sector that has historically been subjected to numerous reviews (for example (Banwell 1964; Higgins and Jessop 1965; The Tavistock Institute 1966). A recent review of these reviews, edited by Murray and Langford (2003) provides a useful insight into this history. It largely confirms a widely held belief that reviews in the last 60 years share similar messages regarding the sectors performance and only subtle differences regarding explanations of poor performance. The contemporary movement for change does however differ in that it
recommends and introduces particular managerial concepts to facilitate the delivery of their aspirations and sets ambitious performance targets for the sector. Both of these aspects are arguably rooted in a simplistic analysis of how such managerial concepts have impacted other sectors and are considered in this thesis to be acontextual and possibly even atheoretical.

1.2.2 Perceived performance and aspirations: a chasm

Aspirations of integration, teamwork, trust, partnering, standardisation, and value for money pervade within the reviews in the last 60 years. The need for alternative managerial practice within the sector to facilitate these aspirations is a common theme within contemporary reports. The source of such alternative practice is predominantly other sectors or perceived pockets of best practice within the construction sector. The iterated challenges or barriers to these aspirations are once again familiar: resistance to change; undesirable culture; and fragmentation. They differ little from previous reports in the preceding 50 years. It is not uncommon to hear these challenges emotively summarised as the ‘illnesses’ of the sector (DETR 1998), ‘traditional bad ways of both thinking and practice’ (Fischer and Green 2001), the plague (Kagioglou et al. 2000) or blindness of the industry to its failings (Cain 2003).

Woudhuysen and Abley’s (2004) question and book title ‘Why is construction so backwards?’ arguably offers another emotive statement in this genre. Such emotive language hints at a similar view from Sturdy and Grey’s (2003) polemic regarding assumptions underpinning the organisational change management movement:

"The fact that Change is seen as necessarily desirable is illustrated in the demonization and pathologizing inherent in the commonly used OCM phrase ‘irrational resistance to change’. Boudon (1986) describes this as an ‘appallingly prejudice-ridden and authoritarian expression’" (Sturdy and Grey 2003)
It may thus be interpreted that there exists a chasm between client aspirations regarding organisational performance and the actual performance of the organisations in the construction sector in the past and present.

Drawing on the discourse mobilised by the movement for change the problem is understood to be rooted with the sectors actual performance and not with their own aspirations. Practices underpinning performance are argued to be in need of modernising and thus repeated calls to innovate and change are commonplace. Previous examples include Quality Assurance (Love et al. 2000), Total Quality Management (McGeorge and Palmer 2002), Benchmarking (Garnett and Pickrell 2000; Pickrell et al. 1997), Partnering (Barlow et al. 1997; Bennett and Jayes 1998) and Value Management (Male et al. 1998a; 1998b). This drive has been founded on the basis of successful implementation and benefits accrued from said management theories, concepts, tools and techniques by organisations within other industry sectors.

A paradox is inherent in this continued call for change and innovation: If such repeated calls for change and innovation are in the interest of those organisations and practitioners that populate the construction sector why have they consistently failed to resolve what are considered stubborn problems. This paradox is of course based on the assumption that practitioners in the construction sector are incapable of rational choice (Sturdy and Grey 2003) and are to be considered dilettantes (Fernie et al. 2003). This assumption informs the basis of this research where practitioners' interpretations of supply chain management will not be considered to reflect some kind of 'illnesses' (DETR 1998), 'traditional bad ways of both thinking and practice' (Fischer and Green 2001), the plague (Kagioglou et al. 2000) or, blindness of the industry to its failings (Cain 2003). Neither will these practitioners be generalised and framed as backwards (Woudhuysen and Abley 2004), irrational (Sturdy and Grey 2003) or dilettantes (Fernie et al. 2003a). Indeed, it is argued that contextual approaches, such as sensemaking, concede practitioners to
be highly knowledgeable and reflexive. This perspective on practitioners within construction organisations informs the basis upon which this research is based.

1.2.3 Reiterating familiar concerns
The contemporary movement for change arguments for reform and change are ostensibly driven by clients' ongoing dissatisfaction with the sector's performance. It is worth noting that the dominant position of clients in the contemporary movement for change is not serendipitous as Murray (2003) points out the CTF deliberately excluded contractors. The tendency for change management initiatives to reflect the aspirations of clients is also recognised by Rooke et al. (2003) in their analysis of 'the claims culture' in construction. Despite a more balanced representation of clients, contractors and suppliers within the 'movement for innovation' and 'construction best practice programme', client dominance still prevailed.

It is within this frame of reference that calls for supply chain management are founded and must be understood. It must also be understood that these clients are not wholly representative of the client base within the sector. They represent some of the largest client bodies in the country. They are typically repeat procurers that are both public and private in nature. Their concerns therefore do not necessarily resonate with all clients of the construction sector or indeed with practitioners embedded within organisations operating within the construction industry. Client perspectives on issues, concerns and aspirations within the construction sector cannot be assumed to reflect interpretations of issues, concerns and aspirations of all stakeholders. Engaging with the interpretations of practitioners embedded in organisations within the construction sector regarding supply chain management will most likely reveal an entirely different perspective on issues, concerns and aspirations and to what extent supply chain management reflects and reinforces that perspective.
1.3 The introduction of supply chain management to the construction sector

The most recent government reports highlighted the inability of construction organisations to understand and improve upon interdependencies, supply chain relationships and a culture of mistrust between organisations evidenced on projects (DETR 1998). The overriding message of the report is encapsulated in the following statement:

"Teams of designers, constructors and suppliers [need to] work together through a series of projects, continuously developing the product and the supply chain, eliminating waste in the delivery process, innovating and learning from experience." (DETR 1998)

Central to this message is a vision of integrating the process of delivery and specialists (designers, contractors and suppliers) around the product, the product reflecting the needs (time, cost, quality and functionality) of the end user or consumer. This vision, rooted in a manufacturing context, and associated managerial concepts, is considered to be capable of adoption by practitioners and organisations in the construction industry. Notable however in the message was the introduction of a relatively new term to the construction sector - supply chain. It is also notable that this supply chain is the subject of continuous development across projects. Within other industries this is perceived to be done through the adoption of supply chain management.

The report therefore reinforced the tendency of the construction industry to import knowledge from outwith the sector (W.S. Atkins 1994) by identifying the success of supply chain management within other industry sectors. It also largely reinforces the view of this author of an underlying tendency in the movement for change towards context stripping, universal assumptions of practice and an allegiance to the notion that the sector is a poor performer - it is an acontextual view of managerial concepts and practices.
Therefore, the success of supply chain management and associated efficiency gains within manufacturing sectors appears to have been the basis upon which supply chain management was considered to be useful for adoption by the construction sector. Supply chain management is thus considered to be a form of best practice advocated by the movement for change. A subsequent number of Government sponsored research projects through the auspices of the Engineering and Physical Sciences Research Council (EPSRC) and the Department of the Environment, Transport and the Regions (DETR) reflect this view (see Evans and Towill 1997; Holti et al. 2000; Fernie et al. 2000; Naim 1997 and; Sarshar et al. 2000 for an outline of such research).

A body of literature focusing on supply chain management quickly followed. Notably, McGeorge and Palmer (2002) have included a new chapter dedicated to supply chain management in their second edition (first edition was published in 1997) of 'Construction Management: new directions' reflecting its growing stature as a relevant managerial concept for construction. McGeorge and Palmer's (2002) understanding of perspectives (or schools of thought) of supply chain management follows a similar pattern to that outlined in this thesis. Their chapter however is largely prescriptive and does not demonstrate a contextual understanding of supply chain management in the construction sector. Indeed, they argue for an ideal scenario, yet to be achieved, where clients reach through more than one tier and proactively manage supply for supply chain management theory to make sense in construction. This is an interesting conclusion to their desk-based research but not empirically grounded.

Supply chain management is therefore clearly part of the agenda for reform within the construction sector. However, issues surrounding its legitimacy within the construction sector, the basis of its importation and reflection on its content need further investigation.
1.4 Framing the research

1.4.1 Contextual sensitivity and supply chain management
There are a number of substantial contributions within the supply chain management literature that make explicit and implicit reference to the importance of aspects of context in generating theory and understanding the practice of supply chain management. The most significant, vociferous and consistent of such contributions has been Andrew Cox's perspective on the relative power of buyers and suppliers in specific exchange relationships (see for example Cox 1999b; 2001a; 2001b; 2004; Cox et al. 2000; 2002). This perspective rejects what is termed the tyranny of best practice (Cox 2001a) that prescribes one best way to characterise buyer and seller relationships – collaborative working. The economic objectives of buyers and suppliers within exchange relationships are understood to be based upon a number of contextual factors that relate to the use of power and conflict in the appropriation of money. This contextual thinking is grounded within Porter's (1985) wider grasp of contextual sensitivity rationalised as the five forces that shape organisational strategy: the current state of competitive market rivalry; the scope for new market entrants; the threat of substitutes; and the power of buyers and the power of suppliers (Figure 1).

![Porters Five Forces Model](image-url)

Figure 1: Porters Five Forces Model of industry Competitiveness
Clearly the five forces relate to industry structure and cannot be presumed to be consistent either within a single industry, organisation or across industries. Indeed, Cox and Ireland (2002) briefly turned their attention to the construction sector and criticised the dominant thinking within the sector for lacking an understanding of buyer and supplier power as a determinant of appropriate choices regarding a variety of exchange relationships (Ireland 2004). Much of this criticism was based on the sectors allegiance to notions of best practice and a failure to understand the dynamics of the industry structure such as Porter's (1985) five forces on organisational choice.

Other recent contributors to the argument of the need for contextual sensitivity in regards to supply chain management were Mouritsen et al. (2003). Their exploration of what 'management' within the context of supply chain management stood for similarly concluded that the management of a supply chain is highly dependent on power and what they called contextual circumstances. Whilst Cox and Ireland (2002) focused on exchange relationships, Mouritsen et al. (2003) focused on integration and similarly challenged the rational argument that integration is best practice. In this respect, they similarly rebut notions of 'best practice':

"... 'best practice' in SCM should only be copied and implemented if the objective situational factors are exactly the same, which is very seldom the case." (Mouritsen et al. 2003)

The idea that disintegration and arms-length relations may be appropriate characteristics for managing supply chains in specific circumstances is posited as the basis of future research by (Mouritsen et al. 2003) and resonates considerably with the views and opinions of the author of this thesis. Such characteristics may indeed be the most appropriate way to manage supply chains within the construction sector. Drawing on an interpretative paradigm as the basis of such research, Mouritsen et al. (2003) argue that it is necessary to understand what meaning
practitioners attribute to managerial concepts such as supply chain management to achieve a situational (contextual) understanding. From the perspective of this thesis, the arguments of both Cox and Ireland (2002) and Mouritsen et al. (2003) reinforce the argument to explore the relevance of supply chain management to practitioners in organisations that comprise the construction sector. Such a view of engaging with context and exploring the behaviour of practitioners with respect to inter-organisational relationships is also argued for by Ramsay (2004).

Ramsay (2004) considers the current discourse of supply chain management describing a journey from uninformed adversarial buyer-supplier attitudes towards enlightened co-operative relations to be grounded in myth rather than an understanding of practitioner behavior in context.

Currently, within the construction industry (and academia alike) little evidence exists to support any claims regarding a common theoretical understanding of supply chain management. There are however a number of prescriptive texts on supply chain management in the construction sector (see Austin et al. 2001; Holti et al. 2000; McGeorge and Palmer 2002). In contrast, the aim of this research is not to prescribe supply chain management but rather to provide an explanation for how practitioners make sense of supply chain management in context. Such research it is argued will reveal valuable insights into both the theory and practice of supply chain management within the construction sector and follows the arguments of Mouritsen et al. (2003) in this respect.

It is argued here that engaging with practitioners interpretations of supply chain management will posit a more robust contextual understanding of supply chain management in the construction sector not previously explored by construction management researchers. The research will contribute to a more detailed, grounded understanding of the trajectory of supply chain management within construction to inform protagonists keen to diffuse supply chain management more widely. Similarly, it will provide new insights into what contextual factors shape and are shaped by supply
chain management. But perhaps most importantly of all, it will contribute to an understanding of the limitations and opportunities of supply chain management as a theoretical concept by exploring its exposure to a new context – construction.

1.4.2 Research: problems, question and objectives

Based on the previous sections, the research begins by positing that:

- Supply chain management is perceived to be important and relevant to organisations competing in the construction sector;
- There is a need to engage with supply chain management theory;
- The underlying assumptions of the movement for change such as universalism limit and constrain debate and change;
- Practitioners are contextually sensitive;
- There is a need to be sensitive to context as interpreted by practitioners in order to understand the relevance and resonance of supply chain management theory with the reality perceived by practitioners in the construction sector.

The initial practical problems of the research are therefore are grounded in a need to:

- Generate a theoretical understanding of supply chain management;
- Understand and explore theories sensitive to practitioners interpretations of the content of change in context;
- Develop a broad understanding of supply chain management issues, problems and concerns within the literature;
- Test supply chain management theory against empirical evidence.

It is considered that in addressing such problems an evolving contextual understanding of supply chain management will emerge that places an emphasis on practitioners' interpretations and tests accepted supply chain management theory in a construction context.
In summary this research will address the following research problem (P1), questions (Q1) and objectives (O1-O5):

**P1:** The assumptions that underpin the calls for change in the construction sector are acontextual and atheoretical. They fail to engage or resonate with the experienced reality of practitioners operating within organisations in the construction sector. Recent calls for change regarding the adoption of supply chain management in the construction sector are underpinned by these assumptions.

**Q1:** How do practitioners within construction organisations make sense of supply chain management?

**O1:** Explore and highlight contextual approaches for understanding managerial practice that challenge notions of the simplistic transfer and relevance of supply chain management to the construction sector.

**O2:** Develop a broad theoretical understanding of supply chain management, key issues and concerns from organisation studies and mainstream management literature as well as the construction management literature.

**O3:** Offer an explanation of how practitioners within construction organisations make sense of supply chain management.

**O4:** Compare, contrast and highlight tensions between O2 & O3.

**O5** Draw out conclusions, limitations and recommendations from the research.

### 1.4.3 Scope of research

The scope of this study is therefore to generate an understanding of supply chain management rooted in a construction context. The research problem is therefore focused on engaging with and understanding the
reality (Walsham 1993) of supply chain management in construction organisations from a practitioner's perspective.

The movement for change is largely criticised for its lack of sensitivity to context, allegiance to 'best practice' and simplistic notions of 'learning across business sectors'. The research conducted in this thesis is therefore particularly designed to provide an alternative basis for engaging with and understanding contemporary supply chain management theory. It is argued that engaging with practitioners' interpretations of both the content of supply chain management and context will contribute to a greater understanding of supply chain management theory and practice within the construction sector (see Figure 2).

The thesis is therefore not concerned with developing and advocating the adoption of supply chain management tools and techniques for either implementation or application of supply chain management in the construction sector. Such a position would be to assume that supply chain management per se is relevant and makes sense (resonates) to practitioners in construction organisations. Its adoption by other industry sectors such as the auto industry and, its popularity and support from the large repeat clients of the construction sector are considered in this thesis to fall substantially short of a convincing argument for its adoption by organisations and practitioners within the construction sector. Indeed, its legitimisation, implementation, adoption and form within organisations in the construction sector are argued in this thesis to be largely determined by knowledgeable and reflexive practitioners embedded in context. It is conceivable that practitioners may act to legitimise its rejection or indeed form a particular interpretation of supply chain management that resonates with and reflects their own concerns and interests.
The construction sector is by no means typical of other sectors where supply chain management is argued to have proven successful (see Womack et al. 1990). Despite the propensity in the Egan report (DETR 1998) to draw parallels between the construction sector and the use of supply chain management in other sectors, this thesis views such acontextual perspectives to fall considerably short of the rigour required to advocate change. Managerial practice does not occur in a vacuum. Supply chain management success it will be argued in this thesis cannot be separated from context and presented as a generic universal recipe. Industrial sectors differ considerably and it is necessary to engage in understanding context in how it shapes and is shaped by managerial practice. The thesis however does not argue that practitioners' actions are structurally determined, but rather their actions are informed by an interpretation of context and practice (DiMaggio and Powell 1991; Giddens 1993; Weick 1995).
This thesis is therefore concerned with engaging in analysis to explore practitioners' interpretations of supply chain management. These interpretations will be used to test accepted theory regarding supply chain management and provide an explanation of how practitioners make sense of supply chain management. The work draws on much of the thinking behind Fernie et al. (2003b; 2002; 2001), Green et al. (2005; 2004; 2002) and Weller et al. (2004; 2002) and, is informed by contextual theories such as sensemaking, structuration and (new) institutionalism.

1.5 Guide to the thesis
Chapter 1 broadly outlines and develops initial arguments to support claims for conducting an investigation into how practitioners make sense of supply chain management.

Chapter 2 critiques the movement for change literature and challenges the assumptions that underpin their calls for change. In doing so, it is possible to introduce alternative assumptions that underpin calls for a more contextually orientated approach to developing explanations for the relevance of supply chain management theory in a variety of contexts. Assumptions underpinning contextual approaches are then reviewed in as the basis of supporting the application of such an approach in this thesis. The use of contextual approaches in organisation studies is also reviewed as a way to strengthen the argument for the adoption of a contextual approach and to provide an insight into how such an approach can be adopted.

Chapter 3 and 4 review and provide an interpretation of the supply chain management literature within the mainstream organisation studies and management literature. There are a number of issues identified within this literature regarding the theoretical basis of supply chain management and how it is understood elsewhere – is it a fad? A number of dominant storylines and key aspects of supply chain management are also identified and provide an understanding of the content of change associated with supply chain management. This content provides the
basis of testing theory against practitioners' interpretations of supply chain management in context. The content also underpins the propositions used to guide the analysis of data in the multiple case study strategy.

Chapter 5 reviews and provides an interpretation of the supply chain management literature within the construction sector. Influential contributions are reviewed and used to both demonstrate the development of supply chain management to date in the construction sector and, how this thesis contributes something different to this body of knowledge.

Chapter 6 outlines and lays bare for the reader the assumptions, methodology and research design adopted for conducting the research presented in this thesis. Much of this was informed by a review of literature associated with paradigms of inquiry, research design and methodology. The approach adopted conceded to an ontological affinity and the rejection of the thesis of incommensurability. The research methodology follows a case study strategy and looks for literal replication across multiple case studies to support the propositions developed during the case study design.

Chapter 7 discusses the findings from the analysis of each case study separately against the propositions. A discussion of the findings from the cross case analysis form the second part of this chapter and is mainly concerned with looking for literal replication. The findings supported claims that practitioners draw on unique contextual factors in interpreting supply chain management and an emphasis on relationships. Indeed it is found that supply chain management does not make sense to practitioners in the construction sector.

Chapter 8 presents a general discussion of the findings and presents the conclusions of the research with a brief discussion of the perceived
limitations of the research. This chapter concludes with a brief list of recommendations for further inquiry.

The connections between the various parts of this thesis are made through the use of a case study research strategy and are outlined in Figure 3. The strategy draws upon the theory explored in chapters 2, 3, 4, and 5 in developing broad theoretical propositions that form the principal focus for the research. These propositions also draw upon an understanding of the research problem, question and objectives developed in chapter 1. The strategy of the case study research is to adopt the use of a multi-case study design that uses analytic generalisation and thus seek to generalise from the data to the theory. Literal replication is used to support explanations for how practitioners in construction organisations make sense of supply chain management. This is similarly used to explain any similarities or disparities between theory and practice. In essence the thesis is concerned with testing the theory of supply chain management in the context of organisations competing in the construction sector. The final chapter offers a discussion and interpretation of the findings and draws out the author's reflections upon the conclusions, recommendations and limitations of the research.
Figure 3: Map of the case study research strategy
CHAPTER 2 - CONTEXTUAL APPROACHES

2.1 Introduction
This chapter is intended to present an alternative contemporary perspective for conducting inquiry into understanding managerial practice in context. The movement for change is therefore subjected to a critique that is not intended to dismiss but to inform and guide. The purpose is to present an alternative approach that is intended to compliment and not replace more traditional perspectives for conducting organisational inquiry. This critique leads the author to support claims for the adoption of a more contextually orientated approach. These approaches are therefore reviewed and outlined in this chapter and contribute to an understanding of the research problem (P1), the research question (Q1) and the aims of the research (O1, O3). The use of such approaches to organisational inquiry is supported and used by a number of leading academic researchers' pursuing a number of organisational inquiries into disparate phenomena. Whilst they differ slightly in scope, they draw from and are informed by contextual theories such as structuration (Giddens, 1999), new institutionalism (DiMaggio and Powell 1991) and sensemaking (Weick 1995). The chapter ends with an exploration of the application of such perspectives within the construction management literature. It is argued that these contextual approaches will help provide robust explanations from practitioners rooted in context regarding the relevance and sense of supply chain management to organisations competing in the construction sector. Such explanations are argued to be missing from the literature.

2.2 Calls for change in the construction sector: critical reflections
The assumptions that underpin calls for improvement and change in the construction sector will be explored in this section of the thesis as a way of highlighting their limitations. It must be noted however that it is not the intention of this thesis to dismiss current approaches and assumptions that underpin current calls for improvement and change. The main point
in this chapter will be to argue that there are other alternative approaches underpinned by different assumptions that contribute to a greater understanding of change associated with managerial practice. The critical reflections in this chapter are therefore designed to inform, not to overly criticise and dismiss. It is also accepted that such reflections may not be wholly exhaustive or descriptive of the assumptions that underpin calls for improvement and change in the construction sector. They do however serve their purpose in this thesis as a way to explore and highlight limitations and the potential room for alternative approaches to formulating explanations about phenomenon.

2.2.1 Context stripping
Observers of the reviews, past and present, of the construction sector will be struck by the consistent description of the sector as underperforming. However, whilst it might be interpreted that the performance of other sectors compare favourably to the construction sector, such a comparison may be guilty of failing to address and engage with context – it is an acontextual comparison. Generic managerial practice is challenged by this acontextual charge. Similarly, the view that the content of practice and its performance in one sector will be mirrored upon transfer is also argued to be flawed on the basis of its acontextual assumptions. This view tends to reflect a change agenda that is more concerned with transfer and adoption than with understanding the performance (or relevance) of practice in a context. This view also largely dismisses the complex and messy problem of diffusing innovations (Rogers 2003) and recent research concerned with the complexity surrounding knowledge sharing, creation and learning (Akbar 2003; Bresnen 1999; Fernie et al. 2003a; 2003b; 2001; Green et al. 2004).

Managerial practice or knowledge is considered here to be rooted in a context and must be understood to be contextually dependent. Failure to accept this is typically described elsewhere as context stripping and refers to the consequences arising from a research design that uses what is termed a precise quantitative approach (Guba and Lincoln 1998).
These approaches focus on a specific set of variables and exclude from the data collection and subsequent analysis the impact of other potentially influential contextual factors. Contextually stripping potentially important factors from a study limits the generalisability of the findings to other contexts (See Nutt 2000; Swan et al. 1999). Similarly, such findings generalised from one context for application in another context require recontextualisation (Gavigan et al. 1999). Thus, separating influential aspects of host and receiving contexts in comparative studies places limitations on explaining the link between the practice under study and its performance or indeed relevance. Whilst it is difficult in this thesis to empirically explore the context within which supply chain management is perceived to have succeeded, the thesis seeks explanations for how construction practitioners' made sense of supply chain management in context. Arguably, theirs will be an interpretation that is shaped by and shapes the context within which supply chain management must negotiate. Engaging with practitioner interpretations of supply chain management also allows a way for researchers to engage with context.

2.2.2 Challenging best practice
Universalistic assumptions regarding the application and implementation of managerial practice brings with it a number of criticisms not least that of being led down a utopian cul-de-sac (Purcell 1999). Such criticism is largely directed against the simplistic search for and adoption of best practice. What is required to improve our understanding of the performance of best practice is an understanding of the circumstances within which best practice is used, when it is used and why (Harrison 1998; Marchington and Grugulis 1998; Martin and Beaumont 1998; Purcell 1999; Wood and de Menezes 1998; Youndt et al. 1996). Indeed, research questions relating to the circumstances in which successful companies do not use best practice and why they do not use best practice may be as rich in learning as the former. Essentially, the above authors are arguing for a move away from imitation or transfer on the basis of simplistic cause and effect to a position that concedes learning to be drawn from understanding and challenging 'cause and effect' in its
context. Whilst these authors are largely rooted in human resource management, their criticism of universalistic approaches inherent in best practice would appear to be equally valid for supply chain management (see Cox 2001a; 2001b; Mouritsen et al 2003; New 1997) and resonates with others (Akbar 2003; Green 2003). However, these warnings highlighting the limitations of best practice find little resonance with the arguments (or lack of) for adopting supply chain management by the contemporary movement for change in the construction sector. Despite Green’s (2002) notable contribution of a critical perspective on the instrumental rationality of best practice and its relation to the technocratic elite (interpreted here as synonymous with the movement for change), the uncritical acceptance of universalistic assumptions in the contemporary change agenda underpins its recent calls for supply chain management (Cox and Ireland 2002).

Underlying best practice is also the assumption that practice is perceived similarly across individuals charged with the tasks of both implementation and application. For example, there are undoubtedly an infinite number of reasons why employees and managers within an organisation or industry may obstruct management initiatives recommending alternative practice (Marchington and Grugulis 1998). It is also clearly possible that reformers setting the agenda for change have distinctively different (if not conflicting) agendas to practitioners immersed a context. From a political perspective the implementation of any form of innovation (change) will inevitably challenge existing interest groups and destabilise existing partnerships within an industry or organisation (Kimberley 1981). Such criticism also indirectly concedes that the successful application of practice in one sector is highly dependent on its compatibility with interest groups and partnerships within that sector or organisation. Thus, an understanding of the performance of a practice must simultaneously be rooted in an understanding of what it means to interest groups and partnerships within a context. The concept of resonance used by Hodder (1998) whereby legitimacy is given to creative ideas if, and only if, they resonate with the concerns of individuals (or groups of individuals) is
equally valid for those responsible for interpreting and legitimising the use of supply chain management – the practitioners

This thesis seeks to challenge the above assumptions and will explore the extent that these assumptions hold true for the implementation of supply chain management in the construction sector. It is expected that interpretations of supply chain management, relevant issues, opportunities and concerns of practitioners in the construction sector will challenge notions of the universal application and interpretation of supply chain management. It is therefore neither presumed that supply chain management makes sense in the construction sector or that its manifestation in the construction sector imitates theory or practice in other sectors.

2.2.3 Context and practice
The importance of context should be of prime concern to influential policy makers and promoters of change in the construction sector. However, the contemporary change agenda within the construction sector would appear to be narrowly focused on the need to adopt alternative managerial concepts and practice, and thus tends to underplay or ignore the importance of context in their arguments for change. This failure to understand and relate initiatives to context is argued to be the reason why many contemporary change programs consistently fail to deliver (Beer et al. 1993). Industry initiatives born from this narrow perspective therefore run the risk of falling into Beer et al's. (1993) trap and, frequently fail to deliver the content of their rhetoric.

In this thesis it is therefore assumed that managerial practice is not enacted within a vacuum. In seeking to understand managerial practice it is argued that context is recognised as an influential aspect of any analysis of managerial practice or those recommending change within organisations. This point is not lost on theorists within organisation studies who have recently explored theories such as structuration (Pozzebon 2004), new institutionalism (Barley and Tolbert 1997; Child
1997), evolutionary economics (Massini et al. 2002) and social and cultural anthropology (Bourdieu 2000; Linstead 1997). These theorists share a particular emphasis on contextual sensitivity and a challenge to dichotomised thinking about the social world. From the perspective of this thesis, such contributions represent useful sources that highlight the need for contextual thinking and sensitivity not overly apparent within the contemporary movement for change in the construction sector or indeed the construction management literature.

The industry's failure to learn lessons from recent change initiatives led Kumaraswamy et al. (2002) to criticise the industry for operating within an out-dated paradigm. It is argued that the reform agenda tends to underestimate what is likely to be an influential factor of perceived poor performance in the construction industry: its context (Cox and Ireland 2002; Cox and Townsend 1997; Love et al. 2000). Structural changes are viewed to lie in the ability to adopt new procurement strategies and achieve an envisaged cultural revolution that ride(s) a wave of procurement reform (Kumaraswamy et al. 2002). Whilst this thesis does not take a cultural perspective, the core argument is remarkably similar: practice is not enacted within a vacuum.

In essence, analysis of change, recommendations for change, implementation of change, and an understanding of the status quo must be sensitive to the dynamic relationship between context and practice. Failure to do so runs the risk of making any associated change initiatives partly or wholly limited. Such thinking and sensitivity does however appear to be under developed within the construction management literature. Arguably, it has also been absent within previous reviews of the sector and change initiatives that have failed to deliver clients aspirations. Beer et al. (1993) may indeed find fertile ground in the construction sector to validate their arguments.

Thus, practice is embedded within and is mediated by context; however this relationship is symbiotic as context is also shaped and reinforced by
practice. Analysis should be simultaneously engaged with context and practice thus resisting the temptation to treat them as separate units of analysis. This avoids what is termed structural determinism where environmental conditions are ultimately determining of organisational characteristics (Child 1997). It also largely seeks to avoid the opposite view where human beings are perceived to be the creators of their context. This dichotomy, at a meta-theoretical level, is frequently referred to as the opposing views of voluntarism and determinism (Burrell and Morgan 1979).

In essence, this thesis is arguing that practitioners view context and practice together as different aspects of the same reality (Walsham 1993). Reality is however subjective, it is dependent on the individual. In this sense, it is necessary to engage with individuals' interpretations of something (practice or in this case the content of change) somewhere (context – the organisation) as the basis of understanding action (or lack of action!). This 'reality' of supply chain management in construction is therefore the main concern within this thesis. To engage with this reality the research will be heavily informed by the content of and application of contextual approaches.

2.3 A review of contextual approaches
From a philosophical perspective it is possible to align notions of best practice, universalism and an over-emphasis on measurement with a view that knowledge is universal and objective. In this sense, these concepts subscribe to a kind of knowledge sought that is described as ahistorical, acontextual and above all, timeless or alternatively the view from nowhere (Dolling 2003). Such a view is juxtapositioned with the view from somewhere where, knowledge is sought that is context dependent, based on hermeneutics where truth is emergent and, a result of hermeneutic experience (see also Shapin 1998).

Whilst this thesis does not adopt the philosophical approach outlined by Shapin (1998), the need for an approach that concedes to a view from
somewhere is considered in this thesis as a way to reflect upon and understand practitioners' interpretations of supply chain management. It is therefore necessary to outline and review a number of significant theoretical contributions to the debate surrounding the development of contextual approaches in sociological debates and organisation studies. Notable contributions come from structuration theory (Giddens 1984) new institutionalism (DiMaggio and Powell 1991; Scott and Meyer 1991) and sensemaking (Weick 1995). There is also considerable support from a number of authors who highlight the importance of context in their analyses of organisational change and knowledge creation (Akbar 2003; Bloodgood and Morrow 2003), innovation (Jones 1997; Massini et al. 2002 McFadzean 1999), strategy (Balogun et al. 2003; Pozzebon 2004; Vaara et al. 2004) and organisational discourse (Heracleous and Henry 1997; Shaw 2002).

Drawing on these theoretical perspectives and relevant empirical contributions to organisation studies the research draws upon and is informed by such approaches.

2.4 Structuration Theory
Located within social theory, structuration theory is viewed by Giddens to characterise social life and change at the level of society (Cohen 1989). Structuration theory posits that the duality of agency and structure are inseparable (Berends et al. 2003). Thus, structuration theory challenges the dualism of structure and action. In this sense, the theory is challenging both the interpretative sociologies over-emphasis on action and simultaneously, functionalist and structuralist sociologies for an over-emphasis on structure (Heracleous and Henry 1997).
<table>
<thead>
<tr>
<th>Characterization of structure</th>
<th>Structuralist theories</th>
<th>Voluntarist theories</th>
<th>Structuration theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structures and cultures determine, shape or heavily constrain</td>
<td>Structures are the revisable products of free agents</td>
<td>Structure is the medium and outcome of the conduct it recursively organizes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characterization of actors/agents</th>
<th>Structuralist theories</th>
<th>Voluntarist theories</th>
<th>Structuration theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors' choices are illusory, marginal and /or trivial. Actors are cultural dopes, the victims of circumstances or instruments of history</td>
<td>Actors make real choices. Actors determine.</td>
<td>Actors are knowledgeable and competent agents who reflexively monitor their action.</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1: Modes of theorizing structure and agency (adapted from Bryant and Jary 2001)**

It has also been similarly described as bridging the gap between deterministic, objective and static notions of structure, on the one hand, and voluntaristic, subjective, and dynamic views, on the other (Barley and Tolbert 1997). The essence of this challenge or bridge building is clearly outlined in Bryant and Jary's (2001) table (see Table 1). This describes the modes of theorizing regarding structure and agency from a determinist, voluntarist and structurationist perspective. It is also seen to challenge the dualism of subjectivity and objectivity in the production of knowledge and the dualism of determinism and voluntarism that typically underpin sociological debate (see Burrell and Morgan 1979).

What is presented in the theory is a duality of structure that is highly sensitive to social structures being constituted by human agency but also, the very medium of this constitution (Giddens 1993).
Importantly, whilst the analytic separation of structure and action is possible the duality of structure argument concedes that they cannot be separated in practice:

"...ontologically, structure and human action are not seen as categorically distinct but as instantiations of each other" (Pozzebon 2004)

Indeed, structuration theory is viewed to challenge, at a meta-theoretical level, the very thesis of the incommensurability of paradigms (or paradigm of paradigms) espoused by Burrell and Morgan (1979) and therefore challenges simultaneously a number of dualism that underpin that thesis (see Weaver and Gioia 1994) (see also section 6.2.3).

2.4.1 Overview
Social systems are argued to have or display structural properties - institutionalised features that stretch across time and space - that are not in themselves structures (Bryant and Jary 2001). Structure has a particular meaning in structuration theory in that it refers to 'systems of generative rules and resources' that social actors within the social system draw on in their social interaction but also thereby change, in their continuous production and reproduction of society through action (Bryant and Jary 1991). Such structures have only a virtual existence – they exist only in the memory of social actors or knowledgeable agents and as instantiated in action (Bryant and Jary 2001). The process by which social actors legitimise social practices relates to these structures and thus practices are embedded in the social system that enables or constrains action – see Figure 4.
It is therefore necessary for social science researchers to understand individuals' meanings and that such meaning is constructed, sustained and changed through social interaction (Heracleous and Henry 1997. From a researchers perspective regarding the production of social research, Cohen (1989) further emphasises this by stating that:

"...given the emphasis on praxis performed by knowledgeable agents, all studies consistent with the principles of structuration theory......necessarily must include some insights into the practical understandings agents maintain with regard to their own conduct and the conduct of others, and how they make sense of the social circumstances in which that conduct occurs." (Cohen 1989)

The goal for researchers using structuration is to engage with knowledgeable agents to understand their interpretations and sensemaking processes.

2.4.2 The process of structuration

Structuration theory views social practice in terms of two recursively linked dimensions – structure and interaction.
Figure 5: The analytical elements of the process of structuration

These dimensions are linked by a third dimension called modality that refers to the modes in which actors can draw upon rules and resources in the production of interaction (Bryant and Jary 2001). This framework is outlined in Figure 5 and is one of the main tenets of Giddens (1984) structuration theory (see also Barley and Tolbert 1997; Staber and Sydow 2002).

The structural dimension or institutional realm refers to existing rules, resources and typifications derived from a cumulative history of action and interaction (Barley and Tolbert 1997). They are properties of communities or collectives rather than of actors (Bryant and Jary 1991). They also only exist in and through the activities of human agents (Giddens 1984). These rules and resources guide action and are simultaneously reaffirmed and reinforced by their application (Orlikowski 2001). This dimension or realm consists of systems of: signification that
represents the rules (this is how we do it here); domination that refers to control of the resources both material (allocative) and people (authoritative) and, the distribution of that power (who is in charge here?) and; legitimation that refers to the process of legitimising rules (this is how we should do it).

The interaction dimension or realm of action relates to how people communicate, enact power and determine what behaviour to sanction and reward (Bryant and Jary 1991).

The modality dimension refers to the mediation of structure and interaction and is described by Bryant and Jary (1991) as knowledge and capabilities that actors are able to call upon in the production of interaction. They are historical accretions of past practice and understandings that set conditions on action. Modalities thus refer to how actors:

1. use interpretative schemes to make sense of behaviours and events through communication that reproduce the rules of signification (Bryant and Jary 1991);
2. use facilities (their command over people and resources) to mobilise available resources thus translating power into domination (Bryant and Jary 1991) and;
3. use norms to sanction behaviours and events thus conferring legitimacy (Staber and Sydow 2002).

This notion of institutions and modalities resonates considerably with the description of different industry sectors and organisations being characterised by recipes (Spender 1996) logics (Pettigrew 1997; Shaw 2002), and organisational routines (Massini et al. 2002) that reflect a historical understanding of both context and practice. Such thinking however is largely absent within the construction management literature although has recently been touched upon in the work of Fernie et al. (2003b), Green et al. (2004) and Weller et al. (2004). Such thinking and
theory is considered in this thesis to be central to the development of a contextual approach to gaining explanations for how practitioners make sense of supply chain management.

2.4.3 Knowledgeable and reflexive actors
There are two other assumptions in structuration theory that have been alluded to in the previous sections but are worth highlighting independently. First, social actors are considered to be knowledgeable and competent agents. Two types of knowledge are distinguished by Giddens (1984) as discursive and practical knowledge. Discursive knowledge is described as knowledge the actors are able to articulate. Practical knowledge is described as knowledge that actors are able to draw upon but are unable to articulate. This distinction resonates considerably with notions of explicit and tacit knowledge discussed by Goldblatt (2002), Nonaka and Takeuchi (1995) and Polanyi (1996).

Secondly, knowledgeable and competent agents are considered to be constantly in a process of observing and understanding their own and others actions. This is called reflexivity and includes the continuous observation of contexts both social and physical (Giddens 1984). Such rational reflexive monitoring of action by actors also involves both discursive and practical knowledge. They are able to verbalise to some extent such rationalisation through discursive knowledge however other aspects of this rationalisation cannot be articulated since they are rooted in practical knowledge.

This knowledge and reflexivity is however considered to be bounded due to: the difficulty in articulating tacit knowledge; the limited awareness regarding sources of motivation and; most importantly, the unintended consequences of action. Such boundedness places limitations on research to fully understand the duality of structure and action but nevertheless have not limited the adoption of structuration theory by researchers or its ongoing development as a useful theory.
2.4.4 Structuration versus Institutional Theory

Institutional theory is remarkably similar to the theory of structuration. For example, the concept of institution like structuration has its theoretical foundation in sociological theory. In this sense institution is typically defined as an organized, established, procedure (Jepperson 1991). Procedures relate to rules such as the ‘rules of the game’ and resonate with Giddens use of signification within structure. This is also similar to Burns and Flam (1987) who define institutions as shared rules and typifications that identify categories of social actors and their appropriate activities or relationships. Individuals are therefore both responsible for creating and being constrained by institutions. At the heart of institutional theory therefore are social actors engaged in creating and using (through interpretative processes or modes) these recipes, logics, routines, rules, assumptions or institutions. Examples of objects that represent institutions are marriage, sexism, a handshake or marketplace. Institutions are therefore encoded in actors' stocks of practical knowledge and influence how people communicate, enact knowledge and sanction behaviour. This therefore relates to Giddens modalities that actors are able to call upon in the production of interaction.

Institutional theory has also found a particular usage within the study of organisations (see DiMaggio and Powell 1983; Dimaggio and Powell 1991; Hung and Whittington 1997; Jepperson 1991) and, as Whittington (1992) points out, some institutionalists' do mention Giddens in passing although are guilty of only partially adopting aspects of structuration theory. Gidden's challenge to the dualism of structure and agency however is largely absent in institutional theory. Indeed institutional research is argued to have largely ignored the recursive relationship between structure and action where structure (institutions) is argued to be a product of or constraint on action (Barley and Tolbert 1997). Whilst this slightly misrepresents structuration theory (Giddens described structure as both a constraint on and, an enabler of, action), it does help to distinguish between these influential theories. Similarly, Hung and Whittington (1997) argue that institutionalists' need to reconnect the
institutional with the individual to avoid possibly what Whittington (1992) earlier refers to as institutionalists self-confessed tendency to determinism (see also Pozzebon 2004; Scott and Meyer 2001). This largely forms the basis of what is called new institutionalism (see Barley and Tolbert 1997; DiMaggio and Powell 1991; Hung and Whittington 1997; Orrü 1991) and is more reflective upon and directly draws from structuration theory.

2.5 Contextual approaches and organisation studies
There are a number of examples that draw on structuration theory to develop micro-approaches for the broad analysis of organisations (see Bouchikhi 1993; Orlikowski 2001; Whittington 1992), processes (see Pettigrew 1985; 1987; 1997), inter-organisational networks (see Sydow and Staber 2002; Sydow and Windeler 1998) and strategy (see Pozzebon 2004). The view of such researchers follows a pattern that posits organisations as social systems where practices or processes are constantly being transformed, discarded or reinforced through the actions of organisational participants. These participants are knowledgeable and reflexive, they:

1. use interpretative schemes to make sense of behaviours and events through communication that reproduce the rules of signification (Bryant and Jary 2001);
2. use facilities (their command over people and resources) to mobilise available resources thus translating power into domination (Bryant and Jary 2001) and;
3. use norms to sanction behaviours and events thus conferring legitimacy (Staber and Sydow 2002).

For Staber and Sydow (2002) organisational participants/practitioners:

"...face the same challenges as in larger societal settings when responding to and using the social structures in which they are
There have also been a number of researchers in organisation studies that have drawn upon and used the theory of structuration as a meta-theory to challenge the dualism of structure and agency in conceptions of organisations and management (see Hung and Whittington 1997; Orlikowski 2001; Pettigrew 1997; Staber and Sydow 2002; Whittington 1992; Willmott 1987; Willmott 1999a). For example, Willmott's (1987) examination of conceptualizations of management by Dalton (1959), Kotter (1982) and Mintzberg (1973) found a trend towards abstracting the behaviour of managers from structure. Structuration theory he proposed would advance studies of managerial work by accepting the duality of structure and action. The rising importance of structuration theory in organisation and management studies is also noted by Whittington (1992), Brooks (1997) and Pozzebon (2004) as indicative of the relevance of Giddens work to organisational research approaches. A number of examples are reviewed below as influential examples of how structuration theory has been used to develop contextually sensitive research approaches directed at examining organisational phenomenon. These examples are also instructive in allowing the author to develop propositions to inform the research design. Indeed, these examples have been deliberately chosen and elaborated upon because they are highly relevant to the contextual approach adopted in this thesis.

2.5.1 Contextualism and entrepreneurship

Arguing that entrepreneurship research has a tendency to follow a two stream approach where one examines entrepreneur's personality or strategy and the other the environment, Bouchikhi (1993) dismisses what is termed these endogenous and exogenous explanations as inadequate explanations. This parallels the tendency in the study of organisations and the individualist and structuralist sociologies captured in the structure and agency dualism. Indeed, he views the study of organisations as a sub-field of social science and therefore for him it is no surprise that the
study of organisations (including entrepreneurship) follow a similar ontological and epistemological choice to that outlined by Burrell and Morgan (1979) — via the thesis of incommensurability. Drawing on a number of scholars such as Crozier and Friedberg (1977), Piaget (1983) and Pettigrew (1985) he argues for a constructivist framework that integrates the endogenous and exogenous explanations for entrepreneurship. For this framework he ultimately uses Giddens (1984) structuration theory as ‘the most up-to-date version of constructivism in sociology’ (Bouchikhi 1993). His approach accepts that entrepreneurship is neither determined by the entrepreneur or their environment — it is in the interaction of the two (see Figure 6).

![Diagram of Entrepreneurial Process]

**Figure 6: Outcome emerges from a process of interaction between entrepreneur and context**

In outlining the enabling and constraining role of context Bouchikhi (1993) draws on a markets orientation, regulations, structure, economics and politics. Exploring the implementation and adoption of supply chain management in the construction sector, this conceptualisation of context is useful in explaining how practitioners interpret and either copy adapt or reject the concepts and ideas relating to supply chain management. For example, although most industry practitioners are unlikely to be able to recite DTI statistics regarding the structure of their industry they will
nonetheless be knowledgeable and reflexive of organisational structures that reflect and reinforce industry structure.

2.5.2 The contextualisation of organisational learning
Berends et al.'s (2003) approach to understanding organisational learning, drawing on structuration theory, focuses on practices where organisational learning is argued to be realised in organisational practices. These practices are conceded to be socially situated, routinized activities, undertaken in a structured social context and enacted by knowledgeable individuals. Their structuration account of organisational learning therefore focuses on recurring social practices in which knowledge can be applied in organisational practices (see Figure 7).

![Figure 7: A structurationist model of organisational learning (adapted from Berends et al. 2003)](image)

This explores the recursive relationship between action (social practice) and structure. The findings also support the use of structuration as a way understand and bring greater insight to organisational learning and indeed organisational studies. Their work also resonates considerably with Bloodgood and Morrow's (2003) view of change and organisational knowledge transfer that explores the role of discursive (explicit) and practical (tacit) knowledge. This understanding that practices are socially situated, routinized activities, undertaken in a structured social context is useful since it accepts any change in practice will be enacted by
knowledgeable individuals both enabled and constrained by context. Whilst this context is not deterministic it does form part of the process by which knowledgeable and reflexive practitioners learn and legitimise change or the status quo. This reinforces Bouchikhi (1993) emphasis on the role of context. It also further supports calls for a contextual approach to the adoption of supply chain management in the construction sector.

2.5.3 Processual analysis and contextualism

A distinctive style of processual analysis that draws extensively from structuration theory can be found in Warwick's process research. This style is argued to reflect Pettigrew's long-standing ambition to 'capture the dynamic quality of human conduct in organisational life' (Pettigrew 1997). There have been many contributions to this endeavour both empirically based (for example Massini et al. 2002; Pettigrew and Whipp 1993; Pettigrew 1985; Webb and Pettigrew 1999) and reflective of theory (see Pettigrew 1990; 1992; 1997; 2001). This body of work is also very much related to Pettigrew's (2001) recent call for a greater degree of engagement with social scientists and users in developing more contextualist and dynamic views of knowing (see also a similar argument put forward by Bachmann 2003). Their understanding of process analysis is therefore rooted in an active engagement with social theory where they view actions as drivers of process. It must be noted here that process is defined as:

"a sequence of individual and collective events, actions and activities unfolding over time in context" (Pettigrew 1997)

Explaining these actions however by reference to individual or collective agency alone is considered to fall short of a comprehensive explanation. For a fuller explanation of process it is argued that action must also be understood to be embedded in contexts and thus limited by any attendant information, insight and influence. It is this desire for fuller explanations that such processual analysis is argued to be usefully integrated with a structuration perspective where, drawing on Giddens (1979) and Sztomka
(1991) the dual qualities of agents and contexts are required to be recognised:

"Contexts are shaping and shaped. Actors are producers and products." (Pettigrew 1997)

It is their acceptance of this assumption that allows for the context to be viewed as inseparably intertwined with action. Research needs therefore to engage with context and action in the ongoing search for 'patterns in the process, structure and underlying logics' (Pettigrew, 1997). How researchers can achieve this is underlined by Pettigrew in the following quote:

"Context is not just a stimulus environment but a nested arrangement of structures and processes where the subjective interpretations of actors perceiving, learning, and remembering help shape processes" (Pettigrew 1997)

This interpretation of Giddens structuration theory therefore allows Pettigrew (1997) to postulate that context and structure are both enabling and constraining forces on action and that altering aspects of context can also be used by actors as they seek changes and outcomes they require (Massini et al. 2002; Pettigrew 1997). This last line of argument has received little attention in the organisation studies literature although has recently been touched upon by Fernie et al. (2004) in their attempts to understand the mediating effects of integrated procurement strategies on managerial practice. Warwick's process research is also careful to consistently emphasise and explore what is termed 'the heavy hand of the past' that is manifest in an actor's consciousness and informs interpretations of structure and action. Actions of the future cannot escape the actions of the past, indeed they are informed by the actions of the past (Massini et al. 2002). From a structuration perspective this follows what Barley and Tolbert (1997) outlined when describing the structural dimension or institutional realm that refers to existing rules,
resources and typifications derived from a cumulative history of action and interaction. Warwick's process research therefore reflects structuration theory's principles and adopts a contextual approach. Pettigrew's emphasis on knowledgeable and reflexive practitioners shaping processes and practices resonates with the earlier argument in chapter 1 that practitioners are not dilettantes. It also acts to support an emphasis in this thesis of engaging with practitioners to elicit explanations for how they make sense of supply chain management.

2.5.4 Context and ‘continuity and change’

There are many examples of contextualism and the adoption of structuration theory underpinning studies of change in organisations (see for example Bloodgood and Morrow 2003; Cooper et al. 1996; Pettigrew et al. 2001; Staber and Sydow 2002; Sturdy and Grey 2003). This body of literature is highly critical of contemporary and historic organisation change literature describing it as for example: ahistoric, acontextual and aprocessual (Pettigrew et al. 2001) or as previously described – the view from nowhere (Dolling 2003). This relates to propositions that changes in structure and procedures of firms remains unexplored in understanding the transformation of firms in competitive environments (organisational adaptive capacity vs. adaptation) (Massini et al. 2002; Staber and Sydow 2002) which are argued to be underpinned by dominant assumptions of managerialism and universalism (best practice) (Sturdy and Grey 2003). At the heart of such research therefore is the aim to bring a sociological perspective ala Pettigrew et al. (2001) and Bachmann (2003) to this body of change management literature and to draw from structuration theory and new institutionalism in challenging the polarised views of structural determinism and voluntarism in organisation studies. Here, Pettigrew lays the foundations of a contextualist approach and analysis that has been reinforced since his early contribution (see Bloodgood and Morrow 2003; Cooper et al. 1996 Pettigrew et al. 2001; Staber and Sydow 2002; Sturdy and Grey 2003).
This contextualist approach involves the interconnection between three analytical domains related to change called the context, content of change and the process of change. The content of change refers to the areas of change (transformation) under examination such as aspects of managerial practice. Context is related to two separate aspects that include outer and inner. The outer refers to the competitive environment of the firm – political, social and economic (see also Linstead 1997). The inner refers to the structure, culture and political context of the firm through which change has to proceed. Process relates here to the process of change. The process of change relates to action, interactions and reactions of organisational members as they interpret and in turn, shape context and legitimise change/transformation or continuity in the areas under examination.

![Diagram of the contextualist approach]

Figure 8: Framework for a contextualist approach for understanding organisational change.

Whatever the motivation for change, such as narrow managerial drives for effectiveness and efficiency (Pettigrew 1987; Sturdy and Grey 2003), the framework above in Figure 8 rejects dominant views of change that treat the process of change as a simplistic, rational, linear problem.
Change is messy, iterative and emergent where due to the unintended consequences of action, is not necessarily programmable or predictable. Change in itself may also be emergent from a change in context or indeed a change in personnel rather than any predetermined programmed change initiative. It is also necessary to concede that objectives and interpretations of context and process by interest groups driving change may differ considerably from those immersed in these areas under examination. The content of change is also likely to be shaped by context and process. This messiness leads Pettigrew (1987) to the conclusion, similar to the central tenets of structuration theory that:

"Explanations of change have to be able to deal with continuity and change, actions and structures, endogenous and exogenous factors, as well as the role of chance and surprise." (Pettigrew 1987)

In conceding this view, Pettigrew (1987) goes further in developing his thesis by outlining and relating legitimacy, the mechanism used to legitimise and de-legitimise ideas, power, sanctions and interpretation that are remarkably similar to the analytical elements of the process of structuration. This view of change leads Pettigrew (1987) to posit that:

"This recognition that transformation in the firm may involve a challenge for the dominating ideology, cultures, systems of meaning and power relationships in the organizations, makes it clear why and how the process of sensing, justifying, creating, and stabilizing major change can be so tortuous and long" (Pettigrew 1987)

The focus therefore lies with 'changing' rather than on 'change' – it is an attempt to 'catch reality in flight' (Pettigrew et al. 2001). This presents a useful framework for understanding the transformation of construction organisations or supply chains adopting supply chain management in the construction sector. It will allow the exploration of how the content of
change (aspects of supply chain management) shapes, and is shaped by the \textit{process} of change and \textit{context}. In doing so it is necessary to draw on Pettigrew (1997) once again:

\begin{quote}
"Context is not just a stimulus environment but a nested arrangement of structures and processes where the subjective interpretations of actors perceiving, learning, and remembering help shape processes" (Pettigrew 1997)
\end{quote}

The approach adopted in this thesis will be heavily informed by the framework outlined by Pettigrew (1987) who is undoubtedly a significant supporter and contributor to contextualist thinking and approaches in organisation studies to date. The content of change will therefore be informed by a review of supply chain management themes, issues and theoretical perspectives and will relate to the areas of change (transformation) under examination. Contexts will also be drawn upon as part of the analysis of supply chain management in practice. The process of change will be analysed by exploring the interpretations and actions of practitioners engaged in implementing and adopting supply chain management and relating these to both content and context. In doing so a contextual understanding of supply chain management that engages with existing rules, resources and typifications derived from a cumulative history of action and interaction will emerge. This understanding will ultimately be instrumental in explaining whether supply chain management makes sense for industry practitioners embedded within context. It will also be instrumental in highlighting and providing explanations for the legitimacy of current practice.

\textbf{2.5.5 The structuration of collaboration}

There have been a number of useful contributions to understanding inter-organisational collaboration/relationships, supply chains and networks through the adoption of structuration perspectives (see Bachmann 2003; Hardy \textit{et al.} 2003; Phillips \textit{et al.} 2000; Seal \textit{et al.} 2004; Sydow and Windeler 1998). This work has sought to understand or gain insights into
the relationship between organizing networks and network processes (Sydow and Windeler 1998) or the recursive relationship between practice and institutional fields (Hardy et al. 2003; Phillips et al. 2000; Seal et al. 2004).

Phillips et al.'s (2000) attempts to explore how institutional fields reflect and reinforce resources and practices that practitioners draw upon in collaborating are extremely useful and illuminating. Their view that collaboration does not exist in a vacuum and should be understood in context resonates considerably with the objectives of this thesis and others (Fernie et al. 2001). Rules and resources are considered to be drawn upon by social actors to legitimise action (or patterns of organising) and as a way to interpret social activity:

"...institutionalized cultural patterns [this is how we do it here] act as a resource for solving problems while simultaneously constraining action and the ability of social actors to conceive of options as they act in everyday situations." (Phillips et al. 2000)

Such institutionalized modes of organizing and legitimated ways of proceeding in social interaction are considered by Phillips et al. (2000) to be inherent at both an organizational and inter-organizational level. In this sense a widely held and developed set of rules and resources are shared by groups of organisations that engage in repeated and related activities such as organisations within an industry sector. Arguably, within the construction sector institutionalized modes of organizing and legitimated ways of proceeding in social interaction are the very characteristics that persistent calls for change have attempted to challenge such as: opportunistic behaviour; uncooperative relationships between organisations; short-term project thinking and; non standard forms of contracts. Organisations in a sector are considered to inhabit the same institutional field (structural domain) and largely share institutionalized rules and resources that act to shape practice (interaction domain). These rules and resources and, the creation and use of power/power
relations within an institutional field, are considered to provide the context within which collaboration and collaborative forms of organising are negotiated:

"...participants in collaborative processes draw on a range of rules and resources based primarily in the institutional fields of which they are members" (Phillips et al. 2000)

To stop there with their theoretical stance would be to locate Phillips et al. (2000) arguments within a deterministic argument. However, they note that the above forms only 'half of the relationship between institutions and collaboration.

Figure 9: Collaborative processes shape and are shaped by institutional fields (adapted from Phillips et al. 2000)

Negotiated forms of organizing or collaborative processes themselves feed into what they call the structuration of institutional fields. Reshaping the landscape of interaction through the adoption of alternative forms of organizing or collaborative processes ultimately challenges and reshapes institutional fields and their attendant rules, resources and power relationships (see Figure 9). This is not simply a linear process as might be understood from their model but is considered to happen
simultaneously such that drawing on institutional structures as resources in negotiation simultaneously acts to reproduce, challenge and construct those same structures. This mirrors the recursive relationship between structure and action within structuration theory and the duality of structure.

This negotiation and shaping becomes part of the 'heavy hand of the past' (Pettigrew et al. 2001) and forms the backdrop of future negotiations and collaborations – the space within which collaboration or managerial practice is enacted as opposed to a vacuum. At the heart of Phillips et al.'s (2000) argument are two disparate mechanisms of power which separately contribute to:

- negotiate change and;
- institutionalise change.

The first mechanism of power used to negotiate change relates to how institutional rules and resources will be mobilised through power and power relations between organisational members and organisations to define the issue or problem that a strategic change (in this case collaboration) will resolve – its content (Pettigrew 1987). This power is broken down to include formal authority, the control of critical resources and discursive legitimacy (see Hardy and Phillips 1998). Formal authority describes the recognition by others of another's legitimate right to make decisions that will have an affect on an innovation or proposed change (definition, form, etc). Control of critical resources is not a new avenue of exploration for organisation studies scholars and refers to the ability to dictate, through such control, the terms and conditions relating to a change – the benefits largely manipulated to accrue to the most powerful. In the absence of such control in institutional fields (industries or even projects) there is likely to be considerably more negotiation regarding the content, form and terms of change. Discursive legitimacy refers to an ability to command power through recognition that an individual or
organisation has a recognised legitimate right to speak authoritatively regarding any proposed change.

The second mechanism of power to institutionalise change relates to an organisation's ability to challenge and change institutionalised rules and resources to reflect change. Here the institutionalist perspective outlined by DiMaggio and Powell (1983; 1991) (see also Barley and Tolbert 1997; Scott and Meyer 1991) that relates the concept of isomorphism to the institutionalisation of rules and resources is used – institutional isomorphism. Isomorphism is used by DiMaggio and Powell (1983;1991) to refer to a process that forces groups of organisations in similar circumstances (industries) to adopt similar structures and practices or indeed innovation and change. DiMaggio and Powell (1991) also draw on Meyer and Rowan (1977; 1991) and note that as innovation (change) spreads, it reaches a point where the innovation itself has legitimacy beyond that regarding technical or efficacy claims. The power to enact this process of homogenisation and move to the point where the base of legitimacy changes, and beyond, is embodied in this institutional isomorphism that has three principal mechanisms: coercive; mimetic and normative.

Phillips et al. (2000) framework therefore separates the power and power relations needed to facilitate change from that required to institutionalise change. It also usefully highlights that sponsors of change may not have the power and power relations to effect their desired changes or to institutionalise them (see also Seal et al. 2004). This is an interesting perspective that could usefully reveal insights into the relationship between those who call for change in the construction sector and those who have the power and power relations to effect and institutionalise change. Powerful clients may indeed have the power to effect change but do they hold the power to institutionalise change. It is also questionable whether power resides with the interests of those who reject change on the basis that it does not resonate (see Hodder 1998) with such interests. In this sense, do participants within organisations that populate
institutional fields draw upon institutionalised rules and resources to reject certain innovations such as collaboration?

The structuration of collaboration framework outlined by Phillips et al. (2000) recognises the duality of structure and action in mediating change and institutionalising change in sectors. It is particularly useful in directing attention to the role of power and its asymmetry in the structuration of strategic change and compliments Pettigrew’s (1987) framework for a contextualist approach for understanding organisational change. To what extent calls for change in the construction sector recognise the difficulty in understanding institutions and action as they relate recursively through power is questionable. This thesis however will be particularly sensitive to understanding the adoption and institutionalisation of supply chain management as a product of power and power relations and will be captured within the framework outlined by Pettigrew (1987) as an aspect of understanding the process of change.

2.6 Supply chain management and contextualism in construction
The most important aspect of structuration from the perspective of this thesis is the acceptance that practitioners are knowledgeable and reflexive (they are contextually sensitive). In essence, competent and reflexive practitioners continually interpret the interplay between context and practice. Their actions also have intended and unintended consequences that present the need for such constant interpretation. In making the connection between supply chain management, the view from somewhere (contextualism) and organisation studies within the construction sector this thesis will bring fresh insights to research that seeks to explore and understand change in the construction sector. The methodology and research design adopted for this research is informed by much of these perspectives and assumptions and inform the propositions developed as the basis of the case study research adopted in this thesis (see section 6.3.3).
2.7 Chapter summary
In this chapter the movement for change within the construction sector and the dominant assumptions underpinning calls for, and research into, managerial concepts and theories has been critically examined. This movement and supporting research base has been criticised for its acontextual leanings that underpin calls for the use and adoption of best practice such as supply chain management. A review of the management and organisation studies literature reveals a more contextually sensitive approach to support the exploration of organisational phenomena. Theories underpinning such approaches are reviewed such as structuration theory and new institutionalism. Support for their adoption as mechanisms to bring fresh insight to organisational inquiry draws on their application and growing acceptance by management and organisation theorists and researchers. Accepting these approaches are therefore thought to be highly relevant to the problems outlined in this thesis and any contribution to understanding emergent and evolving supply chain management theory and practice in the context of the construction sector. This thesis therefore draws on such theories and their application in organisation studies to develop an approach to understand practitioners’ perspectives surrounding the implementation and adoption of supply chain management.

Specifically, the approach will draw principally on the work of Pettigrew and Whipp (1993), Pettigrew (1987; 1997) and Pettigrew et al. (2001) to explore the transformation of firms during the introduction of supply chain management. The focus will be on understanding, from practitioners’ perspectives, this process of changing (or indeed continuity) when exposed to supply chain management as a proposed and sponsored change.
Figure 10: Framework for a contextualist approach for understanding organisational change

This approach outlined in Figure 10 is also remarkably similar to Bouchikhi (1993) framework for understanding the activities of entrepreneurs and their relationship between entrepreneurs and their environment as enabler and constrainer on outcomes. The approach will also be particularly sensitive to Phillips et al. (2000) work relating to the processes of effecting and institutionalising change (that change being supply chain management) within the sector.

Prior to the analysis however the thesis will review supply chain management theory, issues and themes as the basis upon which to understand the content of change. The review will separate supply chain management literature within the mainstream managerial and organisation studies literature and, the construction management literature. This is primarily carried out to present the originality of the research approach adopted in this thesis to the construction management domain and current literature and research into supply chain management. It is therefore not presumed that construction management researchers and academics draw from the mainstream managerial and
organisation studies literature as the basis of exploring the development and use of supply chain management in the construction sector.

It is also not presumed that construction management researchers and academics draw from contemporary theoretical research inquiries that are explored, developed and used within the managerial and organisation studies literature – such as structuration and new institutionalism. Indeed, as the thesis will demonstrate later, there are particular gulfs between mainstream management literature and construction management literature regarding supply chain management theory. This is particularly interesting since this in itself alludes to contextual differences in the research agendas and intellectual pursuits of managerial researchers and academics in the mainstream and construction management research communities. Whilst this thesis is unable to fully explore this issue it is nonetheless an important aspect of the research since the construction industry is largely served by its own separate research community. This differs from most other industries that are generally served by a research community that does not have such strong allegiances to any particular sector.
3 CHAPTER 3 – OVERVIEW OF SUPPLY CHAIN MANAGEMENT

3.1 Introduction
This aim of this chapter is to ground the research in a detailed understanding of the contours of supply chain management (Mouritsen et al. 2003). This chapter outlines the broad arguments, agreements, disagreements and critical research relating to supply chain management in the literature. The chapter therefore begins with a review of the historical development and origins of supply chain management and moves on to explore the plethora of definitions used to describe supply chain management. The disparity discovered within the literature regarding these elements of understanding is surprising and emphasises the authors view of the need to engage with practitioners interpretations of supply chain management within the construction sector. A review of the literature also reveals a number of broad concerns and issues in the literature regarding supply chain management theory, application and development. Such concerns and issues are explored within the context of this research and further contribute to an understanding and development of the problem under study. The chapter therefore contributes to an understanding of the research problem (P1) and is also instrumental in contributing to an understanding of the research question (Q1) by outlining the content of change associated with supply chain management. The aims (O2 – O4) of the research are also furthered in this chapter: understanding of supply chain management theory; the construction of explanations and; comparison and conclusions.

3.2 The importance of supply chain management
Arguing against supply chain management being just another management fad, New (1997) considers supply chain management to be the most practically and intellectually significant theme within current managerial and economic research. Yet, New (1997) argues along with Cooper et al. (1997), that problems such as defining conceptual
boundaries for supply chain management currently restrict the analysis and interrogation process. However, by the very nature of defining boundaries, restrictions on analysis and inquiry will indeed quickly follow. Despite this, it is apparent that the supply chain management literature needs to be reviewed to provide a detailed understanding of associated and underpinning theory. The need to understand supply chain management on this basis resonates considerably with many authors in the field of supply chain management research (see Cooper et al. 1997; Croom et al. 2000; Ellram 1991; Fernie et al. 2000; New 1997; New and Payne 1995). These authors also tend to agree upon the need for such understanding to facilitate focused and informative research into supply chain management. Thus, while supply chain management is held up to be fundamental and important as a managerial concept there exists considerable caution regarding its vagueness, applicability and universal relevance.

3.3 Historical development
One of the earliest published uses of the phrase supply chain management by Houlihan (1984) refers to the notion of managing across organisational boundaries. However, although this may be the first published use of the phrase, the notion of supply chain management does have antecedent and related bodies of work such as physical distribution management (Gattorna and Walters 1996), logistics (Gattorna 1998; Lamming 1996), systems engineering perspectives (Chase et al. 1998; Evans et al. 1996; Evans and Dank 1998; Naim 1997; New 1997), outsourcing (Cox 1999a), purchasing (Lyson 2000; Moncza et al. 2002; (Lyson 2000; Moncza et al. 2002; Van Weele 2002), industrial economics (Williamson 1985; Ellram 1991) and organisational networks (Nohria and Eccles 1992; New and Mitropoulos 1995). Despite this, the origins of supply chain management remain contested and unclear (Parker 1997). With such a diverse range of related and antecedent literature it remains difficult to state with any certainty the key chronological contributors to the development of supply chain management. Indeed, such diverse and
multidisciplinary development of supply chain management also leads to frequently cited problems regarding

1. Terminology (Metnzer et al. 2001)
2. Definition, (Ross 1998)
3. Theoretical progress (New and Mitropoulos 1995; Croom et al. 2000)
4. Scope and meaning (Parker 1997)

It is concluded therefore that, extensive analysis of the historical development of supply chain management may reveal many disparate story-lines regarding its development. This is ascribed to the tendency for it to be described from many viewpoints depending on the context of the relevant writers. Thus it is not possible to determine which writers or context have shaped and developed the concept through its evolution other than to state that it has evolved to mean something to academics and industrialists alike despite this confusion. It may also explain why there exist disparate perspectives on supply chain management. Such perspectives are reviewed and outlined in the next chapter.

3.4 Definitions
As with most management concepts, supply chain management has many definitions rooted in the literature. Many attempts at definition usually begin by conceding the ambiguity of those currently available (see (Bask and Juga 2001; Hall et al. 2001; Metnzer et al. 2001; Tan 2001). Authors such as Croom et al. (2000) and Vrijhoef (1998) have explored and condensed many of these in their respective reviews on supply chain management. What becomes apparent from these explorations is recognition of the many disparate aspects regarding the content and scope of supply chain management. For example, the optimisation or efficient use of information and material ‘flows’ (Jones and Riley 1985; Houlihan 1987; Ellram 1991; Tan, et al. 1998), developing collaborative relationships (Berry et al. 1994; Caldwell et al. 1997), process integration (Tan et al. 1998; Morgan 1999; Ayers 2002; McGovern et al. 1999)
networks (Lee and Ng 1997; Gadde 2001), core competencies (Prahalad and Hamel 1990), power (Cox and Ireland 2002). It is also notable that disparate views of supply chain management frequently draw from and combine more than one of the aspect cited above.

Whilst Croom et al. (2000) and others find issue with a lack of a universal definition; New (1997) finds the need to explicitly define the boundaries of supply chain management as a potential constraint and barrier to future research into the general area. He notes the dangers of both a tight definition and one that may be too loose, concluding that exploration of the social/ideological constitution of supply chain innovation and questions regarding political and ethical implications (context) may lead to a resolution of this problem. He also takes a very critical stance on research into supply chain management and is by no means typical of the supply chain management literature. He argues that a contributor to the problem of definition may be the dichotomy between the normative and the descriptive views of supply chain management ("the is and the ought"). He adds that practitioners may perpetuate rhetoric, overstatement and profound cynicism and academics may be guilty of "apocalyptic hyperbole" or "promiscuous crypto conservatism". This view of current research into supply chain management by academics and practitioners may be rather bleak but does indicate that a level of caution is required when interpreting the literature and field data surrounding any investigation into supply chain management.

What is also not generally questioned in the literature is an understanding of what supply chain management is in its most abstract sense. In essence, is supply chain management a process, tool, technique, concept, theory, philosophy or simply a "way in which to view the world". Some authors do reference supply chain management as a concept (Ellram 1991; Scott 2001; Croom et al. 2000), a 'label' (New 1997; Fernie et al. 2000) or, a way of thinking (Cox and Lamming 1997; Farley 1997; Franks 1998). However, it is the latter that seems capable of embracing a multitude of the disparate definitions, views and accounts of supply chain
management across a diversity of industrial and organisational settings. In essence, supply chain management may simply be an effective way to view organisational activity. The purpose of supply chain management may be to generate debate and, effect change through a different perspective on the same old problems (Green et al. 2004). This view is embodied in the following statements regarding supply chain management:

"....organizations who developed and implemented Lean manufacturing, TQM, etc., used the term SCM to get over the conceptual view that organisations are connected both internally and externally..." (Franks, 1998)

"...[It is] a way of thinking that is devoted to discovering tools and techniques that provide for increased operational effectiveness and efficiency throughout the delivery channels that must be created internally and externally to support and supply existing corporate product and service offerings to customers." (Cox 1997a)

Another way to view these offerings above is to consider supply chain management as simply a way to widen the domain within which management is applied (Green et al. 2004). In other words, supply chain management extends the scope of organisational management to include management across organisational boundaries. It is no longer enough to simply manage a single organisation, to be successful it is necessary to manage entire supply chains that transcend traditional organisational boundaries. Organisations and their strategies are therefore subordinate to the strategy of a supply chain which is aligned and linked to a pre-defined market within which the supply chains compete (Spekman et al. 2002, Vokurka et al. 2002). How such a strategy can emerge is unclear in the supply chain management literature. Similarly the limitations, weaknesses and constraints that such a view places on organisations are also under-developed.
However, it is not the purpose of this review to consider all definitions and attempt to rationalise, develop and customise another definition. Rather, it is considered more beneficial to be aware of this diverse range of definitions. This it is argued will allow a broader understanding since, it is not the intention to develop another generic view of supply chain management but rather to embrace the diversity as representative of the variety of ways to perceive or interpret supply chain management.

3.5 Overview
One of the most recent and informative critical reviews of supply chain management literature was carried out by Croom et al. (2000) from the Warwick Business School and the Department of Management and Engineering at the University of Padua in Italy. Their review takes the form of categorising the literature to produce a taxonomy of supply chain research and a typology of the field of supply chain management.

The analysis draws upon two classification models using two epistemological dimensions as the basis of coding and analysis. The results of this analysis are depicted in Figure 11. Drawing on this analysis, one of the most significant conclusions of Croom et al.'s. (2000) paper is that there appeared to be a significant lack of a priori theory relating to supply chain management compared with the abundant empirical based literature. Linking this imbalance with the frequently cited warnings and dangers of supply chain management being an ill
considered and misunderstood theoretical concept (Cox 1996; Cox and Lamming 1997; New 1997). However, more importantly, this analysis does highlight one of the crucial objectives of this thesis - the need to focus on underlying theory and interpretations of supply chain management as a pre-requisite to focusing the research and guiding the research design.

3.5.1 The development of supply chain management: Academic theorising or praxis led?

The imbalance, referred to above, identified by Croom et al. (2000) may also be used to concur with the notion that academia is, with reference to management concepts, being led by business practice (Hewitt 1994; Cooper et al. 1997; Lambert and Cooper 2000; Lambert et al. 2001). In essence there is a considerable lack of theory development within academia compared to practitioner based supply chain management rhetoric. However, that is not to say that academia should be leading the development and application of the concept, but rather to agree with Croom et al. (2000) that the current imbalance is unhealthy. Further evidence of this problem can be found within the current discourse of new purchasing concepts (implying supply chain management) (Cox 1996). These are argued to be...

"...based on an atheoretical and unscientific approach to the development of knowledge." (Cox, 1996)

Progress with these concepts, it is argued, will only be achieved if the concepts themselves are grounded and based on theory. He goes on to describe the discourse and actions of academics and practitioners regarding practices such as lean production as an example of this atheoretical and unscientific approach. The lack of attention paid to the context under which these practices have proved successful is also highlighted. This is described, with further disapproval of the current activities of research and industry, as 'barefoot empiricism'. In summing up and reinforcing this position Cox (1996) notes:
"... robust concepts, which provide practical and useful tools and techniques for operational application, can only be refined if they are first grounded in a scientific approach. This approach must reject 'systematic empiricism' (or fad generation) in favour of abstractive reasoning, in which the nature of the firm and the laws of motion and survival which sustain it are taken as the starting points for theory building." (Cox 1996)

There is therefore clearly a need to be aware of 'barefoot empiricism' and industry's tendencies to overlook or blindly accept concepts such as supply chain management. Thus the underlying message to be drawn from this body of the literature is clear - there is a need to understand and reflect upon supply chain management theory. This once again reinforces the need for considerable reflection upon the theory of supply chain management prior to focusing and designing the research in this thesis. It once again reinforces the need for research to be more reflective upon the role of context, its recursive relationship with managerial practice and the value of engaging with practitioners.

3.5.2 The importance of industry structure
The role of the academic research community in the development of supply chain management is considered by New (1997). He argues that research should consider the context of the 'industrial society' and explicitly address ethical, political and economic implications. Similar to Cox (1996; 2004) and Cox et al. (2000), what is highlighted here is the importance of context within which management concepts are considered to be both exportable from and, importable to (Burgess 1998). However, Cox is much more concerned with power as a crucial contextual factor as the basis of making informed choices regarding the use of particular relational contracts in supply chains. A wider perspective on the importance of context in shaping and being shaped by managerial practices is addressed by Fernie et al. (2001). They conclude that in seeking to learn from other sectors, managerial practices such as supply
chain management can only be understood with reference to the context within which they operate. What is proposed in any ‘knowledge sharing’ mechanism between sectors is a process of recontextualising managerial practices for the construction sector. Whilst the purpose of this thesis is not to learn from other sectors, the stated research problem (P1) and question (Q1) emphasise a need to understand the relevance and sense of supply chain management within the context of organisations competing in the construction sector.

Whilst Porter (Porter 1985; 1990) does not refer to supply chain management per se, his conceptualisation of ‘value chains’, interdependent activities and linkages within and external to an organisation makes his contribution valid in any review of supply chain management. Indeed it is difficult to distance Porter’s contribution from many interpretations of supply chain management. The idea that industry structure is a fundamental determinant of how organisations formulate competitive strategy (strategic management) is a crucial feature of Porter’s arguments. Elements of industry structure, inherent in ‘The five competitive forces that determine industry profitability’ (Porter 1985) can be considered as instrumental in shaping and being shaped by managerial practices such as supply chain management. Practitioners’ interpretations of supply chain management will be influenced by a tacit understanding of industry structure. This is what Pettigrew (1997) calls the outer context that contributes to how practices shape and are shaped by context. He also offers the inner context which largely relates to the context of the organisational structure drawn upon by practitioners in legitimising managerial practice. It is precisely this understanding of the importance of structure that informs Fernie et al’s. (2003b) view on effective learning across business sectors. A similar understanding underpins Stonebraker and Afifi’s (2004) and Stonebraker and Liao (2004) research that posits a contingency argument for integrated supply chains that rely on engaging with the nature of organisational strategies in context. Such understandings posited by Fernie et al. (2003b), Stonebraker and Afifi (2004) and Stonebraker and Liao (2004) are also
an important aspect of the development and use of contextual approaches outlined in chapter 2 and largely informed by elements of structuration theory.

3.5.3 Understanding fads
Outlining the view that the academics role is not to ‘sell fads’ (the dominant orthodoxy) and ignore the contradiction between academic proselytising and practical reality, Cox (1996) highlighted the role of the academic as ascertaining theoretically possible hypotheses. This supports New (1997) and Croom et al. (2000) by reinforcing the need for a body of knowledge, attained through ongoing academic rigour, concerning theoretical and historical development of concepts. Specifically, Cox (1996) aimed criticism at the literature on partnership sourcing and network sourcing which were similarly underpinned by a focus on relationships and trust in much the same way as supply chain management (see section 4.5.3). The consequence arising from a poor understanding of concepts’ theoretical and historical development is clearly captured by Cox (1996):

“...fads can, if not properly understood and rigorously analysed, be implemented incorrectly or out of context and can do far more harm than good.” (Cox 1996)

This danger is further emphasised by Cox and Lamming (1997) in their discussion on the approach used by firms in managing supplier relationships in a supply chain. They describe practitioners as failing to develop an approach grounded in a conceptual understanding of the problem. With respect to supply chain management, do practitioners in the construction sector develop supply chain approaches grounded in an understanding of the theoretical content of supply chain management — or is it treated as just another fad. Seeking explanations regarding how supply chain management is made sense of by practitioners in the construction sector will reveal answers to this issue.
Thus, the dominant orthodoxy (the need for supply chain management), manifest as a fad and without careful consideration of its theoretical and historical development and, the issue of context, may ultimately fail to resolve many of the problems it purports to solve. Given a lack of a priori theory (Croom et al. 2000), the arguments of Cooper et al. (1997), Ellram (1991), and Cox (1996) and, the warnings of New (1997), it is important to explore the variety of supply chain management interpretations and concepts in context rather than attempts to presume its meaning and form without recourse to context. This research therefore follows (Burgess 1998) advice and will with respect to supply chain management - approach with caution. Theories of supply chain management may make little sense to those practitioners rooted in a construction context despite any notions of it being considered elsewhere as best practice. The need however to understand theory and to develop an approach that captures practitioners sensitivity to context and practice is developed in this thesis as a way to avoid some of these problems.

3.5.4 The influence of globalisation

Globalisation is frequently cited in the supply chain management literature as an influencing factor in both its development and design (Ellram 1991; Lamming 1995; Brewer et al. 2001; Vokurka 2002). The globalisation pressures described by Ellram (1991) are also used by Lamming (1995) and describe the competitive pressures placed upon organisations in the globalised markets of the nineties Lamming (1995) suggests that organisations respond to these global pressures by reducing the size of the business unit and developing closer managed collaborative relationships with suppliers. This new approach is described as a complex organisation involving ownership of a centre core and collaborative management of an external organisation. Effectively the organisation becomes smaller, focusing on core competencies whilst outsourcing others under collaborative forms of relational contracts.

Similarly, Saunders (1998) describes similar pressures when outlining the impact on corporate and business strategy. Ultimately, this decision
regarding 'make or buy', own or outsource, (Saunders 1997; Chase et al. 1998; Baines et al. 2005) has close links with notions of core competencies (or asset specificity) and mechanisms to develop business strategies (Evans and Danks 1998; Gattorna 1998; Fuchs 1998; Kuglin 1998). The level of mergers and acquisitions in the global marketplace is closely linked with the emergence of supply chain management strategies and how they relate to this context (Mattsson 2003). This in part explains the emphasis placed on globalisation and how this relates to supply chain management. These will be explored in detail later in this review.

Despite this argument regarding globalisation pressures to explain the need for supply chain management, the construction sector is not global. The construction sector is predominantly regional. However, the last 20 years has seen a dramatic reduction in the size (manpower) of large construction contractors to mirror those described by Lamming (1995). These large labour intensive organisations have been replaced with an increasing tendency to subcontract packages of work on a piecemeal basis (Dainty et al. 2001; Humphreys et al. 2003). They are moving towards what is termed hollowed out firms (Green et al. 2002).

Traditionally, the management of subcontractors is not conducted on a collaborative arrangement. It has been argued elsewhere that the absence of collaborative working relationships in the construction sector is largely down to the structure of the industry being unsupportive of such practices (Green et al. 2002). Given these arguments, how practitioners make sense of the content of supply chain management in this context will reveal as much about their interpretations of context as it does practice.

3.6 Chapter summary
One of the issues within the supply chain management literature identified in this chapter has been what is referred to 'barefoot' or 'systematic empiricism' (Cox 1996). In this sense, the theoretical debate and contributions to supply chain management theory are considered to be acontextual and to some extent atheoretical. It is therefore important
to preclude any analysis of supply chain management in this thesis with a thorough investigation of theory. It is also necessary to be aware of the importance of context and the need to:

"reject 'systematic empiricism' (or fad generation) in favour of abstractive reasoning, in which the nature of the firm and the laws of motion and survival which sustain it are taken as the starting points for theory building. (Cox 1996).

This thesis, as already discussed in Chapter 1 and developed in Chapter 2, will be informed by contextual approaches that recognise the recursive relationship between context and how practitioners draw on this relationship in making sense of supply chain management. The thesis will also be keen to identify which aspects of supply chain management theory industry practitioners dominantly draw upon in their interpretations and enactment of supply chain management – if at all. It may also be instrumental in determining whether supply chain management is in essence treated as another fad or managerial fashion.

A useful model for initially rooting supply chain management in context (inner and outer) is Porter's (1985; 1990) five forces model. This model is instrumental in highlighting the role industry structure plays in determining to a certain extent the strategy, structure and managerial practices adopted by organisations that populate that sector. It is however largely a deterministic approach that pays little cognisance to the notion of individuals (or organisations) freedom of choice regarding their course of action(s). Whilst it is therefore useful, it is considered here to be a starting point for the argument for, and development of, contextual sensitivity. Whilst practitioners undoubtedly have a tacit understanding of market structures they are more likely to draw on their interpretations of organisational and inter-organisational contexts in how they make sense of managerial practice. A discussion of industry structure is therefore used in the final chapter of this thesis to place the findings ascertained.
from the research into the wider context of the industry structure (see 8.2.4).

One of the frequent attendant arguments for the adoption of supply chain management is the idea of globalisation and the need for organisations to react to the demands of competing in a global marketplace. Whilst the idea of globalisation pressures impacting construction organisations competitive strategy and behaviour is dismissed as largely irrelevant in the construction sector it will however be important to derive from analysis of practitioners interpretations what drivers there are in place to promote and disseminate supply chain management in the construction sector. In essence, if not globalisation then what forces or institutions are driving the implementation and adoption of supply chain management? To what extent do these forces or institutions hold power or can mobilise power relations to effect and institutionalise the content of supply chain management.

Figure 12: Broad concerns and issues arising from the supply chain management literature
Figure 12 outlines a number of issues, concerns and aspects of supply chain management that have been derived from this chapter dedicated to an overview of supply chain management. These are used in the methodology and research design chapter to develop theoretically based propositions in a case study research strategy. They are also instrumental in helping develop explanations for how practitioners make sense of supply chain management.

There is therefore little doubt that supply chain management is considered by both academic theorists and practitioners alike to be highly relevant as a topic for theoretical debate and of practical relevance to industry practitioners. There is however considerable confusion regarding definition, chronological development, scope and meaning. There are a number of influential contributions to the debate on supply chain management that provide support for an investigation that is informed by theory and an approach that captures and uses interpretations of context as part of the analysis process. In particular, the research design and analysis will be concerned with whether practitioners' interpretations of supply chain management reflect an understanding of theory or are informed by an interpretation of it being little more than a fad. Do practitioners describe supply chain management as it is enacted in their organisation or do they prescribe what is needed to legitimise their interpretations of the content of supply chain management? The research design and analysis will also be concerned with understanding how the content of supply chain management challenges the dominance of current practice within practitioners' interpretations and actions. Interpretations of influential aspects of context will also allow explanations to emerge that describe how practitioners make sense of these concerns within organisations that populate the construction sector.
4 CHAPTER 4 - BROAD THEORETICAL PERSPECTIVES OF SUPPLY CHAIN MANAGEMENT

4.1 Introduction
The aim of this chapter is to explore, within the mainstream managerial and organisational studies literature, the variety of perspectives that characterise supply chain management and to outline the content of supply chain management. One of the broadest distinctions in the supply chain management literature reflects strategic and operational views and forms the first part of this chapter. What follows this section is a greater exploration and understanding of perspectives within these broad strategic and operational views. The chapter therefore outlines perspectives on alignment, strategic procurement management and competitive positioning. These paint a broad picture of a strategic view on supply chain management. From a more operational view there are distinctions that reflect a logistics and, purchasing and supplier management perspective on supply chain management. The interconnectedness between strategic and operational perspectives on supply chain management in organisations is clearly evident in the exploration and explanations of such views and perspectives. These perspectives are used to highlight a number of key aspects and broad themes that underpin much of the supply chain management literature. The discussion and summary at the end of the chapter draws out a broad picture of supply chain management theory that encompasses all perspectives, key aspects and themes. This picture helps inform the basis upon which theoretical propositions are developed in the research design and informs the analysis. The chapter therefore contributes to an understanding of the research problem (P1) and question (Q1). It also contributes to the aims in a similar way to that of chapter 3 (O2-O4).

4.2 Broad strategic and operational views
Supply chain management is frequently viewed from a perspective that seeks to strategically manage and strongly position a firm within particular
markets (Ellram 1991; Chadwick and Rajagopal 1995; Hobbs 1996; Cox et al. 2002; Moncza et al. 2002: Cox 2004). It is therefore for them primarily concerned with understanding markets and what is required to compete in these markets. Indeed, as Tan et al. (1999) observe:

"Supply Chain Management provides a framework within which to implement a well-conceived market strategy." (Tan et al. 1999)

They do warn however that it cannot undo the effects of a poorly conceived one. In this respect, supply chain strategy is frequently referred to and reflects a firm's raison detre - its understanding of markets and corporate decisions surrounding linkages, ownership and management of competencies or assets. The emphasis is on a strategic view of the firm where its managerial frame of reference is competencies, resources or assets and their orientation to the marketplace and other organisations.

This differs from an operational view that sees competitive advantage as the product of attaining greater effective and efficient ways to manage goods and services. The operational view therefore focuses on themes such as logistics (Tan et al. 1998; Gimenez and Ventura 2004), collaborative relationships and high performance production systems (Cox 1999c).

However, it must be noted that the operational and strategic views do not exist in isolation of each other. It is important to recognise the need for developing and executing particular operational practices to be viewed as contributing to an organisation's business strategy (Baines et al. 2005).

4.3 Perspectives that form a strategic view
There is therefore a need to consider issues such as alignment (between strategy and markets), relationships and contracts, the importance of assets and competencies and, competitive structures as contributors to a strategic management perspective of supply chain management.
4.3.1 Alignment

Alignment embodies the need to consider the corporate aspects, needs and drivers of an organisation and also the market(s) it wants to exploit (Rich and Hines 1997; Gattorna 1998; Kuglin et al. 1998). Essentially, the notion of supply chain management is used to explain why an organisation must engage in restructuring, downsizing, acquisition or merger. It is therefore used to justify and support restructuring based on whether to own, acquire or outsource competencies and therefore cannot be divorced from operations.

The existence of poor alignment between markets and organisational strategy is highlighted by Tamas (2000) and a theory proposed by Gattorna (1998) and Gattorna and Walters (1996). The theory outlines four key elements as the basis of an alignment model - the competitive environment (the market), organisational strategy, culture and leadership. The theory is predicated upon an understanding that an organisational strategy is only appropriate in a given set of competitive conditions. Likewise, culture and leadership styles are only considered appropriate for given organisational strategies. The successful organisation therefore possesses an organisational strategy that successfully marries the market environment with its culture and leadership. There is therefore a heavy emphasis in analysing and understanding both the market and organisational capabilities as the basis of organisational strategy.

Similarly, Fuchs (1998) propose an emerging view of organisational strategy that focuses on alignment between strategic positioning in the market and an organisation's capability to execute strategy, which may well be constantly changing. They argue that it is insufficient for organisations to be effective in one aspect and that competitive advantage is based on both positioning and execution. This may well reflect the distinction between the strategic and operational view of supply chain management outlined by Cox (1996) and places an emphasis on alignment and effectiveness in both.
Notably, Kuglin (1998), Gattorna (1998), Fuchs (1998) and Gattorna and Walters (1996) share a particular similarity in their approach to supply chain management. They each recognise that supply chain management from a strategic perspective embodies the need to understand and analyse both the markets within which organisations want to operate and, the competencies required to compete in these markets. In doing so, an organisation is in then in a position to understand how to structure itself (its competencies) and govern others (suppliers competencies) to strongly position itself in markets. It is this notion of structure and governance that lends weight to Cox’s (1996) Strategic Procurement Management.

4.3.2 Strategic Procurement Management

Strategic Procurement Management introduces to the strategic perspective on supply chain management concepts such as core competencies (Hamel and Prahalad 1994) and asset specificity (Williamson 1979). Using these concepts as building blocks, Cox (1996) proposes an entrepreneurial theory of the firm as the basis for developing business strategy. This also places the importance of understanding markets and competencies as a way of engineering a sustainable position for an individual or individuals in a supply or value chain.

Strategic procurement management principally draws from Williamson (1979) and his emphasis on transactions as the basis for determining the structure of the firm. In essence everything a firm does is considered from the standpoint of a transaction. In this sense we are directed by Cox (1996) to adopt the view that a firm is a ‘nexus of contracts’ (Coase 1937). Contracts in this sense cover those between organisations (external) and also between employer and employees (internal). Organisational strategy is therefore a consequence of choices made regarding the use of a variety of contracts and relationships to manage resources. In essence, it becomes incumbent upon the strategic management of organisations to consider the position of the organisation in the market (its current boundaries) and how this can be manipulated.
via the use of collaborative and competitive relationships. Manipulation may also take the form of downsizing, acquisition or merger. The elevation of procurement professionals to impact and participate in this arena of decision-making is seen as the challenge to those who seek a more strategic position for procurement professionals (Cox 1999a). The need to constantly defend core competencies and manage complimentary competencies via relational forms of contract is therefore essential.

Similarly, Spekman et al. (1998) describes the changing paradigm of organisations from a "survival of the fittest" view of the world to a view that is predicated on understanding and managing resources and skills within markets that are consistent with the overall objectives and strategies of the organisation. This he continues is achieved through shared objectives, eradication of duplication and the sharing of information. In other words, understanding the marketplace and managing a process of integration can produce benefits for organisations. What Spekman et al. (1998) present is a typology of relational forms of contract similar to the governance structure described by Cox (1996). They determine that the strategic importance to organisations and the complexity of specific relationship determine the appropriate relational form – See Figure 13.
Ellram (1991) also contributes to the positions adopted by Cox (1996) and Speckman et al. (1998) by arguing that supply chain management is simply another way of competing in the market. Ellram (1991) takes a strategic view of how organisations can use a variety of forms of relationships and legal contracts to obtain competitive advantage in a market. A continuum for competitively organising is used to determine the scope for supply chain management with reference to existing legal forms of contracting. Supply chain management is considered here to be a process of removing a transaction from the marketplace using vertical integration and obligational contracting (Ellram 1991). This resonates with strategic procurement management (Cox 1996) and the typology of relational forms proposed by Spekman et al. (1998).

What Cox (1996), Speckman et al. (1998) and Ellram (1991) concede regarding supply chain management is the fact that no one specific relational form or contract is suitable for all circumstances. A similar understanding runs through Stuart and McCutcheon's (2000) guideline for choosing an appropriate relationship with suppliers and in particular those that are strategically outsourced from the business. Notably, the purpose of such management via relational forms of contract is not to achieve efficiency gains but rather to maintain or seek a better position in the marketplace for the firm. The market or industry structure as context therefore has an overriding bearing on the use of a variety of strategic internal and external forms of relationships. Open market negotiation with all or most external clients and suppliers may be the most suitable strategy for an organisation despite the weight of argument that they are, at an operational level, less efficient that collaborative ones.

4.4 Perspectives that form an operational view
An operational view sees competitive advantage as the product of attaining greater effective and efficient ways to manage goods and
services. The operational view therefore focuses on themes such as logistics and purchasing (Tan et al. 1998).

### 4.4.1 Logistics

The view of supply chain management from a logistics perspective is very common in the supply chain management literature (see Houlihan 1987; Christopher 1992; 1998a; Handfield and Nichols 1999; Brewer et al. 2001; Lambert et al. 2001; Gimenez and Ventura 2005). The traditional view of logistics as the optimisations of flows within the confines or boundaries of single organisations is challenged by supply chain management where the scope for optimisation is argued to extend beyond the boundaries of a single firm (Christopher 1992; Cooper et al. 1997; Lambert et al. 1998; Handfield and Nichols 1999). Indeed this extension of the concept of optimisation beyond boundaries seems to take on a systems view that transcends all organisational boundaries in a supply chain. This is typically reflected in early definitions of supply chain management such as:

> "supply chain management is an integrated approach to dealing with the planning and control of the material flow from suppliers to end users" (Jones and Riley 1985)

This view is widely supported in the literature (see Stevens 1989; Lee, and Billington 1992; Sabbath, 1995; Kochan 1996; Evans et al. 1996; Bowersox, and Closs 1996; Christopher 1998b; Hong-Minh 2002; Piplani and Fu 2005). Supply chain management as a management philosophy outlined by Mentzer et al. (2001) also outlines the prominence of a systems approach. This philosophy or systems view is also argued to place considerable pressure on logistic managers to re-skill (Gammelgaard and Larson 2001).

To varying degrees, this systems view of logistics and need to re-skill is predicated on notions of integration, inventory control and electronic information exchange mechanisms between organisations. An
understanding of these is therefore useful in understanding the logistics perspective of supply chain management but it also informs much of the overarching operational perspective of supply chain management and therefore also impacts on the purchasing perspective in many places. Indeed Tan et al. (1998; 1999) combine these perspectives into one cohesive model they describe as the supply chain management paradigm.

4.4.1.1 Integration

4.4.1.1.1 Introduction
Arguing that supplier integration is an advanced form of supply chain management Monczka and Morgan (1998) set it apart from partnering and alliances. It is argued that the ongoing sharing of information, problem solving and co-location outwith the existence of products and projects makes integration more advanced. They also note that the lack of equity ownership makes integration distinct from mergers and acquisitions. The advantage of integration is principally seen to be flexibility for both parties. In essence, organisations integrate for as long as is commercially viable and integrate with more than one supplier and customer. Indeed as Monczka and Morgan (1996) point out, whilst dependency is increased, dispersed loyalty to a limited supplier and customer base ensures competitiveness and innovation. Integration rather than interface is therefore considered to be key to supply chain management (Houlihan 1987). Houlihan's (1987) arguments and recommendations are principally concerned with classical materials and manufacturing control across international supply chains. Indeed supply chain management appears to be offered as an alternative systems perspective on such control and a:

"...rejection of inventory as the easy "buy-out" option to many of the troublesome balancing and trade-off decisions." (Houlihan 1987)
Logistics and integration are therefore intertwined and inseparable from most debates and discussion on supply chain management.

4.4.1.1.2 Integration and relationships
With respect to logistics, it is useful to note that the Council of Logistics Management redefined logistics management from being indistinguishable from supply chain management to viewing it as only one part of supply chain management (Lambert et al. 2001). This concedes, according to Lambert et al. (2001), a wider understanding of supply chain management which includes:

“...integrating and managing key business processes across the supply chain” (Cooper et al. 1997).

It must also be noted that supply chain integration is rarely considered outwith the context of inter-organisational collaboration, alliances or partnering (see Stevens 1989; Sabath 1995; Handfield and Nichols 1999; Hong-Minh. 2002; Mouritsen et al. 2003). Indeed Handfield and Nichols (1999) define supply chain management as:

“...the integration of these activities [associated with the flow of materials and information] through improved supply chain relationships, to achieve a sustainable competitive advantage.”

(Handfield and Nichols 1999)

Similarly, in discussing manufacturing supply chains Bhaskaran and Leung (1997) describe it as:

“...an integrative approach to managing the inter-related flows of products and information among suppliers, manufacturers, distributors, retailers and customers.” (Bhaskaran and Leung 1997)
It follows therefore that relationships and systems perspectives facilitate the widening of the traditional view of organisation boundaries and thus scope for integration and optimisation. However, Bask and Juga (2001) note that there are many dimensions to integration and, that various forms from tight to loose can bring similar benefits in different contexts.

4.4.1.1.3 Optimisation
This optimising of flows for competitive advantage across organisational boundaries inevitably lead to notions of competing supply chains or networks (Bowersox 1997; Lambert and Cooper 2000; Lambert et al. 2001; Spekman et al. 2002; Vokurka et al. 2002), virtual organisations (Van der Vlist et al. 1997) and extended enterprises (Browne et al. 1995). These all have at their core a similar rationale and assumption that organisations in the system or supply chain share similar objectives. It also however largely ignores the concept of power (Hardy 1996) between transacting parties as both a contributor to the structuring and ongoing operation of supply chains.

4.4.1.1.4 Alignment
Integrating the supply chain is also argued to be based on a view of material and information flow from three aligned perspectives namely, strategic, tactical and operational (Stevens 1989). Similarly, Houlihan (1987) describes these as discrete levels of managerial control for vertical integration. Stevens (1989) outlines a structured approach to the development of an integrated supply chain strategy in Figure 14.

Figure 14: Three phases of integrating the supply chain
The need to look outwards from the organisation and make an evaluation of the marketplace in phase I resonates considerably with the strategic view of supply chain management outlined previously and the arguments for a contingency approach to integrated supply chains outlined by Stonebraker and Afifi (2004). The achievement of an integrated supply chain is however considered to be more a 'bottom up' approach. This indication of a top-down development of strategy and a bottom-up notion of integration is very similar to alignment theory discussed previously.

### 4.4.1.1.5 Internal integration

According to Stevens (1989) developing integration begins with a strategic view of the organisation in the marketplace but its achievement begins with an inward look at the organisation itself. The inward look gives rise to the internal supply chain (Handfield and Nichols 1999) and is in essence a reference to links between the separate functions of the business and the organisations core competencies. It is also feasible to think of systems integration based on individuals as a unit of analysis although this is not pursued in the literature.

Whilst the recognition of an internal supply chain is frequently conceded in the literature (see Cousins 1995; Cox 1995; Cox and Lamming 1997; Baines et al. 2005) attempts to address it are limited. Perhaps one of the most notable contributions to internal supply chain management is Porter's (1985) -value chain analysis, which explicitly recognises the need to optimise flows of information and material between the internal linkages of an organisation. Christopher (1992; 1998a) also notes that supply chain management is recognition in the logistics field that **internal integration by itself is not sufficient.** It's not sufficient, but he does concede in this view that it is necessary nonetheless. The supply chain management literature is however dominated by a view of supply chain management that focuses on the links between organisations and not those internal to the organisation itself. Indeed it also does not address the links between organisations that are captured under the single
umbrella of a conglomerate. It is therefore curious that Lee and Billington (1992) should cite organisational myopia regarding supply chain management as a pitfall of its implementation since holism and systems thinking across organisational boundaries overshadow this seemingly myopic view.

4.4.1.1.6 External integration
The final stage of integration in Stevens (1989) model is external and concedes the need for a change in attitude from treating suppliers and customers as adversaries to one characterised by co-operation and mutual support. A number of stages of integration including internal are necessary steps prior to addressing external integration (Stevens 1989). Essentially, this final stage of integration falls short of 'vertical integration' where ownership is attained (Ellram 1991). The ideal in this type of integration is to achieve all the benefits of optimisation from taking a systems perspective without incurring problems of acquisition or, adding complexity to the current organisational structure. A similar argument is also put forward regarding the benefits of partnering by McBeth and Ferguson (1994). Notably, they find difficulty in finding clear distance between concepts such as supply chain management and partnering.

4.4.1.1.7 Integration and dependence
Whilst conceding integration as indistinguishable from supply chain management Scott and Westbrook (1991) consider the barriers to achieving integration and propose three steps to challenge such barriers. These steps involve mapping the pipeline (supply chain), positioning the organisations with respect to relations with suppliers and customers and finally, determining the appropriate action to improve effectiveness or efficiency of the chain. This mirrors the conceptual framework of supply chain management outlined by Lambert and Cooper (2000). Scott and Westbrook (1991) essentially note three steps to identify opportunities for collaborative working with suppliers. The most notable aspect of their paper is a list of factors that they argue must be understood to achieve an understanding of current relations with suppliers. Of these factors, the idea of dependence dominates.
Figure 15: Customer/Supplier Dependence Grid (adapted from Scott and Westbrook 1991)

To understand this dependence Scott and Westbrook (1991) outline a simple 2x2 matrix (see Figure 15) using two easily collectable and understood sets of data namely, the importance of the customer to the suppliers order book and, the importance of those suppliers to the customers purchased items.

"Even ownership of a supplier is not as powerful a motivator as being its dominant customer." (Scott and Westbrook 1991)

Scott and Westbrook (1991) argue that it is the move from supplier independence towards dependence via global competition that lends support for the need to adopt supply chain management and integration. Whilst there are organisations who are increasingly competing for construction contracts across the world, the idea of the construction sector dominantly being a global competitive market is not supported by any body of literature. On the contrary, construction markets remains local, regional or national. As such we have local, regional and national contractors and subcontractors.
4.4.1.1.8 Unanswered Issues
Whilst this idea of integration facilitating the optimisation of flows within a system that transcends organisational boundaries seems wholly rational, there remain crucially unanswered (indeed unasked) questions in the literature. Where does the objectivity in this exercise emanate from? Is it possible to conceive of objective decision-making for optimisation in the system and, if so, by who? The most powerful? The organisation positioned in the supply or value chain nearest the ultimate customer? Cooper and Ellram (1993) ask a similar question: Are supply chains characterised by one strong leader or does a multi-firm approach also work? Davies (1995) similarly asks but does not answer the question of who owns the supply chain? The key according to Davies is to stop individuals within the supply chain taking isolated decisions, make local deals and optimise the profitability of their own bit of the supply chain. But how? This also gives rise to the question of how benefits (arising from the optimisation) are apportioned (Tan et al. 1999). The assumption in most supply chain management literature is that it is the customer through one chain attempting to compete with another. Why is this the case? And would it differ depending on the structure of the market and industry? Much of this is of course based on an assumption that such integration makes sense in context.

4.4.1.2 Information and distribution effects on Inventory control
The notion of controlling or reducing inventory from a systems perspective is argued to be the original goal of supply chain management (Cooper and Ellram 1993). Inventory is traditionally used to militate against uncertainty in demand and is calculated to ensure that there is either always enough stock to meet customer demand (Hong-Minh 2002) or that penalties of occasionally running out of stock are preferential to the costs of holding too much (Waters 2001). Arguably, for immediate response, it is not possible to entirely eliminate inventory across a supply chain since it is not possible to achieve absolute certainty regarding
customer demand and zero time distribution. Someone, somewhere in the supply chain will be holding inventory.

From a systems perspective it is a matter of analysis and trade-offs to determine an optimal solution such as that proposed 17 years ago by Houlihan (1987). Whilst the need to reduce inventory has been a widespread objective in industry since early 20th century (Waters 2001), Christopher (1992) argues that the effect of recent interest rates on asset productivity and supply chain management considerably influences current policies. Essentially the subsequent high capital costs of holding various types of inventory, argued to be up to 50% of organisations assets, make it an obvious target for potential efficiency gains. Inventory is therefore an intra-organisational and an inter-organisational concern mirroring a similar distinction between internal and external supply chains.

Drawing on Forrester's (1961) theory of industrial dynamics, Christopher (1992) also uses the 'acceleration effect' to highlight distortions in the inventory held in a supply chain. Effectively, stock levels for a product throughout the supply chain amplify the further an organisation is removed from the customer. This is also typically known as the 'bullwhip effect' (Lee et al. 1997). The reduction of 'lead times' between order placement and delivery (distribution time) was considered by Forrester (1961) as a potential solution to reduce the amplification effect. Recent studies on the bullwhip effect in the supply chain also indicate reduced information delay (Larsen et al. 1999), information enrichment (Mason-Jones and Towill 1998) and information transparency (McCullin and Towill 2001) as well as reduced lead times (Sterman 1989; Mason-Jones and Towill 1998) to reduce the effect. Indeed, Lee and Billington (1992), drawing on their experience of supply chain management, outline fourteen pitfalls of managing supply chain inventory of which the majority are explicitly related to information and distribution.
The objective of reducing inventory across a supply chain is therefore concomitant with achieving and improving inter-organisational distribution and information systems. Thus, information and distribution concepts, systems, tools and techniques abound in the supply chain management literature for example, Quick Response (QR) (Fisher 1997); Efficient Customer (or Consumer) Response (ECR) (Waters 2001); Demand Resource Planning (DRP) (Crapser and Gray 1995) and; MRP and MRPII (Kochan 1996). However, there are recognised problems and limitations associated with the implementation of these concepts, systems, tools and techniques. Table 2 below, adapted from Waters (2001) outlines some of these problems and limitations.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>It is difficult to get all organisations in the supply chain working together for a common purpose, sharing information and integrating systems.</td>
</tr>
<tr>
<td>2.</td>
<td>Organisations do not necessarily trust each other, they have different objectives and constraints, do not want long-term alliances, and generally see no reason for such close co-operation.</td>
</tr>
<tr>
<td>3.</td>
<td>JIT, and more particularly ECR, needs fundamental changes to operations, so that they can react quickly and flexibility to demands from their customers.</td>
</tr>
<tr>
<td>4.</td>
<td>Any level of inventory management needs a certain level of industrial and economic stability. Relatively few countries can supply this, and many are still at the point where high stocks are a positive advantage. If parts of the supply chain operate in such areas, it becomes impossible to integrate the entire supply chain.</td>
</tr>
</tbody>
</table>

Table 2: Typical problems of implementing inventory management systems across the supply chain.

Similar to much of the supply chain management literature, Waters (2001) highlight the need for common objectives (1,2), information sharing (1), integration (1,4), trust (2), long-term alliances (2) and co-operation (2). However, contrary to much of the supply chain management literature, they do not take for granted that these can be easily achieved if at all. Implicitly, it is the notion of context at both an organisational, industrial and geographical level that underpins much of the problems outlined above.

4.4.2 Purchasing and supplier management

Drawing on supply chain management as a systems approach to viewing the channel as a whole rather than a set of fragmented parts, van Weele
(2002) highlights the importance of purchasing and supply management via a need to focus on inter-organisational relationships. Similarly, we have already outlined the importance of a systems view in developing a logistics perspective on supply chain management. Logistics and purchasing and supply management are frequently considered to be mutually dependent in this systems approach (Saunders 1997; Moncza et al. 2002; Van Weele 2002). The impact of supply chain management on purchasing has therefore seen many recent contributions as a result of this systems and holistic thinking (see Saunders 1997; Stuart 1997; Lyson 2000; Moncza et al. 2002; Van Weele 2002).

4.4.2.1 The importance of purchasing
The importance of purchasing as a determinant of competitive advantage to a firm is frequently grounded in the understanding that; procured inputs to the firm represent anywhere between 55% (Moncza et al. 2002; Van Weele 2002) to 70% (Chase et al. 1998). This statistic should differ depending on the position of the firm in a supply chain, the nature of the business and the extent culture shapes an organisation's propensity to relinquish control (Saunders 1997). Purchasing, upon reflection of these statistics, is considered highly influential as a function of the business in determining success (Lyson 2000). However, it is only recently that purchasing strategists have come to recognise the importance of the suppliers themselves as opposed to a focus on the products procured (Saunders 1997; Lyson 2000; Moncza et al. 2002). That is not to say that organisations are not concerned with the cost and quality of procured items but rather that a shift in emphasis has occurred recently. This shift in emphasis is a move away from what is described as the traditional short-term opportunistic decision making in purchasing decisions to a strategic, holistic and long-term perspective in decision making (Saunders 1997).

4.4.2.2 The Changing role of procurement
The need to re-examine the role of purchasing leads Monckza et al. (1998) to question the future role of purchasing, notably: Will their roles be participatory? Will they be given a chance to provide information and
take part in decision making? Will traditional procurement jobs be changed, moved, or eliminated as supply chain strategy is developed and implemented? Speckman et al. (1998) as part of his analysis of supply chain management finds a central role for procurement and proposes, drawing on the work of Farmer (1997), a new revolutionary role as opposed to an evolving role.

Similarly Lamming (1995), also sees a new role for purchasing which is based on: an entirely new role in holding together something which has not existed in the past – a complex organisation involving ownership of a centre core and collaborative management of an external organisation. It is the management of the external resources that is seen to be the strategic role for purchasing although he also notes that this strategic function may not be called purchasing since:

"...it is much too limited a word. The connotations of purse strings and spending money have no relevance to the setting up and management of strategic inter-firm relationships" (Lamming 1995).

A systems approach to supply chain management therefore seems to brings with it the necessity for those in purchasing to restructure their role in both a strategic environment within organisations and at an operational level in dealing with and managing the interfaces between organisations. In essence this allows functions such as purchasing (and logistics) to break free from traditional modes of operation and scope.

4.4.2.3 Emerging complimentary forms of purchasing
Two complimentary forms of purchasing that operate within a systems view of supply chain management reflecting this new shift in emphasis in purchasing are ‘tactical purchasing’ and ‘strategic sourcing management’ (Moncza et al. 2002). This first form is concerned principally with the day to day management of material flows and information, which tend to be centred on activities associated with operational purchasing and the traditional view. The latter form involves a cross-functional (internal
supply chain) purchasing perspective on managing, developing and integrating with supplier capabilities [external supply chain] to achieve a competitive advantage – a strategic perspective. Similarly, (Lyson 2000) outlines a corporate/business and a functional/operational perspective on purchasing strategy. Perhaps the most revealing aspects of difference in these strategies are the focus on effectiveness and a long-term vision for the corporate/business perspective and efficiency and immediacy for the functional/operational perspective.

It is the evolving debate on the changing role of purchasing similar to Moncza et al. (2002) and Lyson’s (2000) systems perspective of purchasing that is frequently cited within, linked or credited to supply chain management (Lamming 1995; Cox and Lamming 1997; Spekman et al. 1998; Lyson 2000; Moncza et al. 2002; Van Weele 2002).

4.4.2.4  Purchasing as a strategic form
The underlying rationale for the strategic role of purchasing in supply chain management derives from a need to adopt integrated approaches to strategic plans (Saunders 1997). The dominant structure of ‘purchasing and supply chain management’ textbooks therefore seek to bring an understanding of strategy to purchasing and how this integrates with other functional strategies within the business and the overall business or corporate strategy (Saunders 1997; Lyson 2000; Moncza et al. 2002; Van Weele 2002). A holistic perspective is described as emerging, requiring the purchasing and supply management function of businesses to view the impact of their activity and strategies across the supply chain from raw material suppliers to end users (Saunders 1997). Purchasing and supply chain strategies are viewed as a sub function of the corporate and business level strategies. Indeed Saunders (1997) looks to develop interrelated strategies that also include the individual functional strategies of the business.

In summary, purchasing is viewed to have a role to play in developing and implementing a strategic approach to supply chain management
within an organisation not dissimilar to strategic procurement management described by Cox (1995). Specifically, they should contribute to the process of supply chain positioning similar to that described by Ellram (Ellram 1991). There is also a role for purchasing in contributing to internally aligning the strategies and functions within the organisation, which are crucial in determining the performance of the entire supply chain.

4.5 **Key aspects of supply chain management**

The following lists the key aspects of supply chain management that support both strategic and operational perspectives on supply chain management.

4.5.1 **Level of analysis**

There are four main uses of the term supply chain management which are used to understand and indicate various 'levels of research' based on a systems approach (Harland, 1996). The 'internal chain' relates to the integration of business functions within the boundary of a single organisation (See Stevens, 1989). Much of this view is related to a logistics view of supply chain management.

The 'dyadic relationship' level relates to the integration and relationship management between two organisations. It is principally directed towards the management of supply relationships or 'supplier management'. The third level, 'external chain', extends the dyadic view to include a supplier and its suppliers and a customer and its customers. The boundary placed on supply chain management is merely extending its scope with each level until finally the fourth level orientates itself around the concept of a 'network of interconnected businesses'. Harland (1996) distinguishes the network from the external chain on the basis of connectivity and dependence between the actors in the network. Whilst avoiding the term 'networks' Mentzer et al. (2001) share a similar 'levels of systems' view of supply chain management by distinguishing between three degrees of supply chain complexity – the direct supply chain (dyadic), extended supply chain (external chain) and the ultimate supply chain.
4.5.2 Networks
Much of the focus in the literature on supply chain management centres on the notion of managing a supply network (Lee et al. 1993; Cohen 1988; New and Mitropoulos et al. 1995; Mills et al. 2004). The metaphor of networks concedes the complex web of relationships and interfaces that exist between organizations. For example, it recognises not only the links between contractor and subcontractor, or buyer and sellers, but also between the subcontractors themselves or the subcontractor and clients. Most organisations also have many different customers, product lines and, potentially operate in a variety of geographic markets (Regions, National, European or Global), such that it is necessary to conceptualise the existence of a variety of ‘chains’ that exist within and through an organization. This would be particularly notable in a project based industry sector like construction where a project supply chain would only show:

“...those organisations involved with a particular product, project or service consumed by one customer at one end of the chain” (Fernie et al. 2000).

The idea of considering a network of organisations or a network organisation as discussed by Buono (1997) allows for a broader understanding of the links and interfaces between organisations over long timescales and multiple product or projects. The concept of core competencies also finds a powerful ally in the writings on networks as McHugh (1995) observes that networks are holonic in which each holon (organisation, function or individual) provides a different process capability (Skill, resource or competency). Nitin and Nohria (1992) also lend weight of the idea of an internal and external perspective by observing that networks exist within and external to an organisation.

4.5.3 Relationships
The importance of relationships in supply chain management theory and practice is highlighted by Handfield and Nichols (1999). They describe
relationships as possibly the most challenging and difficult aspect of supply chain management. They view relationships as the foundation or platform from which successful co-ordination and control of flows of material and information occurs. This view is reflected, to varying degrees within the majority of the supply chain management literature (see Ellram 1991; Ellram and Krause 1994; Gattorna, and Walters 1996; Christopher 1998; Cox and Townsend 1997; Cox et al. 2003; Mouritsen 2003) and supported by a view that relationships support business performance (Fynes et al. 2005). The dominant rationale would appear to be based on the assumption that opportunities for developing better relationships between organisations exist. In grasping this opportunity it is implied that organisations can realise strategic objectives such as better market share or operational objectives such as greater efficiency. The difficulty with this assumption is that it fails to debate why current relationships between organisations, predominantly argued to be low trust and uncooperative, were formed and why they prevail. It also fails to concede that such relationships may be appropriate. In essence, this view that these relationships are bad and that collaborative relationships are good is too simple and fails to address important theoretical questions surrounding what supports their current legitimacy.

Despite this, supply chain management is predominantly viewed as a concept to direct attention at improving relationships towards better co-operation and collaboration. Less attention has been directed towards a view that seeks to direct particular relational forms or forms of integration with particular customers and suppliers - a 'horses for courses' approach. A contribution to supply chain management integration by Bask and Juga (2001) reviews trends in contemporary management to question the dominance of the 'more is better' view of integration and collaboration in supply chain management. They conclude that in the current complex business environment no one recipe for integration can exist. Thus, they argue for semi-integrated supply chains that draw upon the use of a variety of relationship forms and integration. Simultaneous use of tight and loose forms of integration is considered to formulate organisational
strategy in achieving goals. Notions of selectivity based on an understanding of context underpin their work. Whichever view is taken, relationships from a supply chain management perspective dominantly involve notions of improving trust, entity boundaries (the unit of analysis), integration and relational forms.

4.5.3.1 Trust
The use of the term trust and the need for better or improved trust between organisations in a supply chain is present throughout the literature and is common across all perspectives outlined previously. Handfield and Nichols (1999) follow this fully accepted aspect of supply chain management by outlining the need for a ‘trusting relationship’. Indeed for them it is the essence of supply chain management. Their typology of trust and ‘rules of thumb’ to aid the development of greater trust are based upon the link between one person’s perceived trustworthiness and another’s confidence arising from such trustworthiness. In attempting to outline the factors that underlie high and low trust economies Korczynski’s (2000) draws on Sabel (1992) in defining trust as the confidence that the other party to an exchange will not exploit one’s vulnerabilities. It is the underlying basis upon which confidence is derived that allows Korczynski (2000) to develop a typology of ‘basis of confidence’ rather than a typology of trust.

The first and, argued to be most common basis of confidence is incentive/governance structure. Organisation (or person) A is confident that B will not exploit its vulnerabilities based on an understanding or perception that B’s ability to compete in the marketplace is based in part on its reputation. Or alternatively, B is dependent on A to compete in the marketplace and thus exploiting B’s vulnerabilities will have long term consequences for A in competing in the marketplace. The second basis of confidence, personal relations, is specifically related to individuals where A and B value their friendship such that they would not exploit each other’s vulnerabilities. The third basis of confidence, knowledge of other’s norms, relates to A’s knowledge of B’s norms and values as a
source of confidence that B will not exploit A’s vulnerabilities. Korczynski’s (2000) last basis of confidence is related to abstract systems such as money or professional institutes. In this sense A attains a degree of confidence that B will not exploit their vulnerabilities because B is a member of a particular professional institute. For example, a procurer of plumbing services will have more confidence in that plumber if he or she is a member of a particular plumbing association. It could be argued that organisations with accreditation such as QA, or ‘investors in people’ are trading on this type of confidence/trust.

Korczynski’s (2000) typology allows a basis for understanding trust. Surprisingly, whilst the use of, and importance placed upon trust in the supply chain management literature is universal, attempts to understand the dynamic of trust between organisations in specific contexts are rarely represented. It is also clear from the basis of confidence typology that many types of trust are likely to be relevant in any one particular exchange between organisations or individuals. It is also clear that the structure of particular industry contexts will impact on confidence and thus endemic levels of trust. This is what Korczynski (2000) describes as the political economy of trust and it is this understanding that leads him to analyse on this basis and conclude, that the construction sector is predominantly a low-trust economy (see also Green et al. 2002; 2004). Whilst the construction management literature is replete with processes and procedures for improving relationships and co-operation between organisations few reflect upon this political economy of trust and its relation to structure. Much of the literature on supply chain management is similarly remiss in addressing the complexities of trust.

4.5.3.2 Relational forms
A focus on relationships, as the motivation for industry improvement is neither novel nor lacking in attention from academic and industrial literature (Lamey 1996). Notably, in construction, one of the Latham (1994) report’s main findings was that the industry should adopt better relationships through the use of partnering (Barlow et al. 1997; Bennett

Contrasting uncooperative relationships with a partnership, collaborative, co-operative or integrative approach is common in the supply chain management literature. This polarising of relationships into these camps is not a recent phenomenon (see Sako 1992). What Sako (1992) describes is a continuum between two ideals: arms-length contractual relations and obligation contractual relations. The characteristics of these relationships are typically used to introduce and conclude the need or desire for greater trust in current relationships (see Handfield and Nichols 1999). The dominant view is therefore that collaborative relationships are more beneficial than arms-length contractual ones.

Contrary to some views, no one type of relationship is considered appropriate for all scenarios. For example, Cox (1996) discusses the use of relational competence analysis, which concedes the use of various relational forms depending on relative importance of external skills and resources to the organisation. Speckman et al. (1998) also note that issues of complexity and strategic importance will indicate the type of relationship appropriate for these circumstances. The most strategically important and complex relationships to manage should be considered on the basis of collaboration between firms. Similarly, Ramsay (2004) calls for 'buyer behaviour' and the rhetoric of supply chain management to move towards collaborative relationships to be unrealistic since it fails to engage with why buyers adopt more adversarial types of relationships. Saunders (1997) also notes that a process or technique for determining the importance of suppliers to the organisation is necessary such as Kraljic's (1983) portfolio matrix and Elliott-Shircore and Steele's (1985) procurement positioning matrix. Conducting such an analysis is considered to have the benefit of allowing purchasing professionals to
consider the allocation of resources for managing these suppliers depending on their position in the matrix and, it also militates against the use of a one size fits all strategy for procurement. Speckman et al. (1998) discuss a similar concept when describing criticality as central to supply chain management that ascribes levels of dependence of how each member of the supply chain views the others. Notion of criticality and dependence are also referenced in the work of Williamson's (1985) transaction costs theory and Emerson's (1962) social exchange theory.

4.5.4 Competing supply chains
The idea of competing supply chains is related throughout the literature as an aspiration and objective of supply chain management (Spekman et al. 2002, Vokurka et al. 2002; Spekman and Davis 2004). It is perhaps this aspect more than any other that distinguishes supply chain management from managerial concepts such as partnering. However, the concepts underpinning partnering mirror that of supply chain management in most respects although the boundary of control sought by the application of supply chain management extends through many organisations and is not dyadic.

4.6 Chapter summary
It has been identified that there are two broadly identifiable views regarding supply chain management. These views have been depicted graphically in Figure 16 below. The figure attempts to capture the strategic perspective of supply chain management described in section 4.3 and reflects an understanding of the relationship between the marketplace and the resources, competencies or assets required to satisfy such markets. It captures the alignment theory explored in section 4.3.1 and the need for organisations to mobilise strategic procurement management strategies to satisfy such alignment (see section 4.3.2). The figure also captures the operational perspective described in section 4.4. This reflects an understanding of the need for optimisation of flows (goods, services and information) to achieve competitive advantage in a marketplace. This perspective is therefore concerned with minimising waste across the interfaces between organisations in delivering goods.
and services to the marketplace and is discussed throughout section 4.4.1. This also draws in purchasing and supplier management strategies in developing and improving relationships between organisations to improve flows and minimise waste (see section 4.4.2).

Figure 16: Strategic and operational theoretical perspectives on supply chain management

The strategic view is therefore concerned with strategically manoeuvring an organisation within a marketplace based on the relative importance, ownership and management of assets within this market. Strategy is therefore heavily rooted in understanding the marketplace (and its structure and contours) and refining and executing a strategy to exploit
current and future opportunities to better position the organisation in that market. This includes the use of relational forms of contract to achieve the strategy of bettering or maintaining the position in the market. It is also heavily linked to calls for procurement professionals to take a more strategic view of relationships with this objective in mind (Spekman et al. 1998). This is related to calls for strategic procurement management by Cox (1999a), a revolutionary role for procurement professionals (Spekman et al. 1998) and strategic sourcing management (Moncza et al. 2002). The operational view however is less concerned with market positioning and more concerned with efficiencies in operational activities within and across organisational boundaries. It does however draw upon the use of relationships and relational forms as requisite in achieving and facilitating the objective of efficiency gains in transactions costs, problem solving and, logistic and inventory management. These objectives are related to the optimisation of flows (Lambert and Cooper 2000), ideas surrounding integration (Stevens 1989), types of relationships, the existence of dependence between organisations (Scott and Westerbrook 1991a) and the decision making power of procurement professionals (Moncza and Morgan 1998, Spekman et al. 1998).

The strategic and operational supply chain management views however cannot be assumed to be separate since they share similar activities to achieve their arguably separate objectives. For example, both strategic and operational objectives of an organisation or supply chain in a particular marketplace may be best served by the adoption and use of inter-firm collaborative working. There may however be markets (structures) that render the use of inter-firm collaborative working as nonsense and therefore an inappropriate strategy for bettering or maintaining an organisation or supply chain’s competitive position. Whilst operational arguments for collaborative working to achieve efficiency gains may make sense, the demands of the market and the position of the organisation in the market may not be best served by collaboration. This point is rather fundamental in challenging the ideas of best practice – whilst it is inevitably impossible to argue against collaboration as a way to
improve efficiencies within and between organisations; this is predominantly because the argument for such efficiency gains is disconnected from an understanding of the market. An understanding of a market by an organisation may lead to an organisational strategy that legitimises opportunism and arms-length contractual relationships despite the compelling arguments that collaboration can improve operational interfaces between organisations. This similarly dismisses the simplistic argument that collaboration, integration, interdependency and trust are universally good.

Thus, despite the arguments for collaboration to make efficiency gains, collaboration may not serve the strategic interests of an organisation in a particular marketplace. It is necessary therefore that any analysis of practitioners interpretations of supply chain management in the constructions sector explore this potential for tension - are attempts to make operational efficiency gains marginalised by an organisational strategy dominated by the legitimacy of open market negotiation? Much of this however is underpinned by an assumption that industry practitioners are aware of, and understand supply chain management theory. It is therefore necessary to explore to what extent practitioners are aware of and, where this education comes from, regarding supply chain management theory.

Figure 17: Key aspects of supply chain management
This chapter has also outlined a number of key aspects of supply chain management drawn from both operational and strategic perspectives that will be used in the research design and analysis. These include the level of analysis with which practitioners relate to supply chain management (Harland 1996, Metnzer et al. 2001), an understanding of networks (Buono 1997, Fernie 2000), the importance placed on and aspects supporting relationships (Lamming 1996, Bask and Juga 2001, Cox et al. 2003) and trust (Handfield and Nichols 1999, Korczynsky 2000).

Based on the review, key aspects and the discussions above, Figure 17 posits a broad picture of supply chain management theory. This picture will be used in the methodology and research design chapter to develop theoretically based propositions in a case study research strategy (Yin 1994). They are also instrumental in helping develop explanations for how practitioners make sense of supply chain management.
5  CHAPTER 5 – DEVELOPMENT OF SUPPLY CHAIN MANAGEMENT IN CONSTRUCTION

5.1 Introduction
This chapter is designed to explore the construction management literature to review the most influential contributions to supply chain management. The chapter begins with a broad overview of the literature to highlight general trends within the literature. Some of the more reflective and valuable contributions to the implementation of supply chain management in the construction sector are discussed and used to determine the limitations of such research as a way to place the contribution of this thesis. These varied contributions are reviewed and also used to help place the contribution of this thesis to the exploration and development of supply chain management theory and practice. These contributions broadly relate to research carried out by the Logistics Systems Dynamics Group at the University of Wales, The Tavistock Institutes work on Building Down Barriers and The University of Loughborough’s Integrated Collaborative Design Research project. The chapter ends with a discussion and summary that explores the relation between the mainstream management literature and the construction management literature and posits a framework of supply chain management thinking in the construction sector. This chapter therefore broadly contributes to an understanding of the research problem (P1) and question (Q1) by outlining the contributions of the construction management research community to developing and understanding theory and practice of supply chain management in the construction sector. The chapter also informs and contributes to the aims of the research (O1-O3) by similarly exploring these contributions as reflections on the theory and practice of supply chain management and a grounding of current contextual sensitivity in such contributions.
5.2 Broad overview
Prior to, and since the publication of the Egan report (DETR 1998), contributions to the construction management literature directed at the development (see Vrijhoef 1998; Fernie et al. 2000) or implementation (see Nicolini et al. 2000; Ofori 2000) of supply chain management in the construction sector have been largely limited. The dominant tendency in the construction management literature is to focus on the 'supply chain' as opposed to supply chain management per se (for example Vrijhoef 1998; Hall et al. 2000; Proverbs 2000; Vrijhoef et al. 2001; Hong-Minh 2002). In doing so, much of the mainstream supply chain management literature drawing on theoretical perspectives on industrial economics, purchasing and logistics are largely underplayed as broad theoretical models informing current inquiry within this research community.

Much of the construction management literature focuses on project efficiency arising from the use of improved relational forms. In this sense, the dominant debate surrounding supply chain management in construction rarely extends beyond the conceptual boundaries of managing the 'dyadic relationship' described by Harland (1994). Pearson's (1999) discussion that supply chain management has replaced 'partnering' as the latest buzzword of the construction industry would appear to have some substance and resonates with McBeth and Ferguson's (1994) concern regarding the inability to distinguish between supply chain management and partnering.

It is also interesting to note that there is little evidence of more strategic perspective on supply chain management being grasped by construction management researchers. Opportunities to explore how construction organisations understand the relationship between the market and assets required to compete in the market are largely absent. Similarly research aimed at exploring how construction organisations seek to position themselves strategically in a market, supply chain or supply network are also absent. As noted in the discussion in chapter 4, debates that
disconnect arguments for operational efficiency from organisational strategy and context can be misleading.

Within the context of projects, development of ‘dyadic relationships’ are clearly constrained by short timeframes and limited scope for repetition. Also, notable by its absence is debate within this body of literature on the integration and management of the ‘internal supply chain’. Perhaps unsurprisingly then, it has been observed in practice that the application and implementation of supply chain management in the construction sector has been slow (Akintoye et al. 2000) in the construction sector.

Arguably, the most influential of supply chain management contributions was a special issue focussing on ‘construction supply chains’ in the European Journal of Purchasing and Supply Management. The special issue intended to bring together a collection of papers to facilitate:

“...insights into the factors affecting the performance of construction supply chains (Love, 2000).

However, many of these papers are notable for a lack of reflection on much of the mainstream supply chain management literature, its historical development, characteristics and key concepts (for example Barker et al. 2000; Hall et al. 2000; Nicholas et al. 2000; Proverbs and Holt 2000). To what extent this represents a tacit understanding of the limitations of implementing supply chain management per se in construction, a form of myopia, a project mentality or, a misrepresentation of available views is difficult to determine. Clearly though, this is a problem for industry practitioners keen to draw upon the construction management literature for interpretation and guidance regarding this new initiative.

There are however some notable contributions that offer a more reflective interpretation of the mainstream supply chain management literature and attempt to offer views aligned with holism (Ofori 2000) and networks
5.2.1 Holistic thinking and networks

Ofori (2000) recognises the 'integration' storyline of supply chain management as a way for the industry to refocus its ideas of integrating the construction process. This perspective and focus on the entire supply chain he considers would be a leap forward in attempts in Singapore to 'green the construction supply chain'. Dubois and Gadde (2000) also discuss a new awareness of the benefits to be gained from better utilising resources from beyond the boundaries of firms.

What concerns Dubois and Gadde (2000) is an appraisal of the occurrence and consequence of networks in the construction industry. For this they describe two types of networks based on an acceptance of the 'temporary multiple organisation' (Cherns and Bryant 1983; Bryman et al. 1987; Bresnen 1988). The first is based on the network of firms' that exist outwith the context of projects. The second network refers to interdependencies between actors within the context of the projects. This latter network forms the basis of Love et al.'s (2004) call for a holistic approach to construction project supply chain management. Their proposed model however follows a well-travelled path in emphasizing the sectors long-standing problems with inter-organizational collaboration, cooperation and learning in a model that is argued to benefit from being client driven.

In this sense, arms-length contractual relationships, competitive tendering and poor adoption and deployment of technology are viewed to be at the heart of poor project performance, poor quality and unnecessary conflict. The difficulty with this project supply chain management model is that the wider network of firms and individuals that represent the network of firms that exist outwith the project organisation is given scant attention. The link between this network and arms-length contractual relationships, lowest cost competitive tendering and poor adoption and deployment of
technology remains unexposed. Project networks however exist within this wider frame of reference and thus, so do project models and propositions for efficiency gains such as that proposed by Love et al. (2004), Humphreys et al. (2003) and Paleneeswaran et al. (2003). Practitioners are inevitably rooted in both networks and their actions are likely to be a consequence of interaction with, and interpretation of these networks. The legitimacy of claims for operational efficiencies in project networks arising from supply chain management must not however, as already noted, be disconnected from this wider network that relates to an understanding of the business in a particular market. This idea of two networks also resonates with Pettigrew’s (1987) conception of the outer and inner context where the latter would relate to the temporary organisation and the former market orientated strategies.

5.2.2 The clients’ role
Briscoe et al. (2004) follow a similar angle to that of Love et al. (2004) in emphasizing the clients role in shaping the characteristics of supply chains but are careful to include an understanding of the environment. They draw on New and Payne’s (1995) exploration of the relationship between environment, practice and performance. They sought to explore the impact of environmental variables in client organisations on their selection of procurement strategies which was argued to be instrumental in determining levels and forms of supply chain integration, collaboration and communication. The most influential variables it would seem are: the volume of demand placed in the construction sector by these clients; the previous experience of practitioners’ involvement with the construction sector; the complexity and structure of the client organisations and attitudes to risk. Clearly, the need for procurement by volume, experience and risk attitudes to change leaves a very small pool of clients in the construction sector capable of shaping supply chain integration that has much substance or can be sustained. This also largely dismisses how environmental variables shape and are shaped by the actions of main and sub-contractors. It is possible that all the appropriate variables may be in place for clients to choose the most appropriate strategy to
encourage supply chain integration but, the context within which
construction organisations compete may act to marginalise supply chain
integration despite clear client support. For example, the skills and
resources necessary to reflect and maintain clients' aspirations to
courage supply chain integration by main contractors may not be
considered viable by contractors who still predominantly work with
traditional (unenlightened) clients. In other words contractors cannot
simultaneously support the skills and resources required to be successful
in competitive contexts where supply chain integration is pushed by
clients and another where traditional arms-length contractual relations
and opportunistic behaviour dominate (Green et al. 2004).

5.2.3 Context
Following a similar analysis of the supply chain management literature as
represents a significant departure from the dominant supply chain
management literature in the constructions sector. The vagaries of the
mainstream literature on supply chain management are presented and
various relevant streams of research including distribution, production,
strategic procurement and industrial organisational economics outlined.
The dominance of project specific supply chain management research in
the construction literature is highlighted and argued to be myopic. An
industries structure and characteristics are argued to represent a wider
frame of reference that allows a greater understanding of firms' behaviour, interdependencies and relationships to emerge. This is
arguably a move towards understanding Dubois and Gadde's (2000)
network that exists outwith the context of projects and re-emphasises the
importance placed upon environmental factors discussed by (Briscoe et
al. 2004).

This kind of understanding and frame of reference leads to questions
regarding the nature of the competitive market within which organisations
operate, how do organisations structure themselves in such environments
and what does this mean for managerial practice and innovations like

103
supply chain management. It also largely warns against any simplistic notion of learning from other sectors and notions of the universal applicability of best practice. Given the industry specific evolution of successful supply chain management in manufacturing does supply chain management make sense to practitioners in the construction sector beyond its rhetorical appeal and apparent common sense? This is touched upon by Cox and Ireland (2002) who, similarly consider effective construction supply chain management to be rooted in an understanding of industry structure. At the heart of their argument is the exploration of the dynamic of power and how this influences buyer and supplier relationships (Cox et al. 2003).

A variety of factors are suggested by Cox and Ireland (2002) to help buyers and suppliers determine power with respect to relationships. These are largely based on an understanding of industry structure and the myriad of relationships and networks that both buyers and suppliers are grounded:

1. The balance between the number of buyers and suppliers
2. The salience of the buyer’s expenditure to the supplier
3. The number of available alternative purchasers to the supplier
4. The extent of supplier switching costs
5. The extent of buyer switching costs
6. The extent to which the product or service is commoditized
7. The extent to which the product or service is standardised
8. The level of buyer search cost and
9. The level of information asymmetry advantage that one party has over the other

Cox and Ireland (2002) are also highly critical of the discourse and tendency of those in the construction sector to view concepts such as supply chain management and lean thinking as best practice. This they argue stifles debate and the development of supply chain management which, can sensibly be debated and discussed by organisations through
the use of their power and relational 2 by 2 matrices. Appropriate strategies to support supplier-buyer relationships can be rooted in an understanding by, buyers and suppliers, of the dynamic of power. They are also not alone in their criticism of best practice and the industries predilection for its adoption (see Green et al. 2002; Green and May 2003). Literature within the human resources management domain also largely supports criticism of best practice as a universal prescription and argues for a more contextual understanding of managerial practice (see Youndt et al. 1996; Harrison 1998; Marchington and Grugulis 1998; Martin and Beaumont 1998; Wood and de Menezes 1998; Purcell 1999).

5.2.4 Context as barrier to supply chain management
Dainty et al. (2001), outlining the potential benefits to be gained from integrating SME's in the supply chain, similar to Quayle's (2003) argument, suggest a number of barriers to the integration of subcontractors into the construction supply chain — see Table 3.
<table>
<thead>
<tr>
<th>Key Issue</th>
<th>Barriers to subcontractor integration into the supply chain</th>
<th>Change required to alleviate barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>Late and incorrect payments</td>
<td>Fair payments from main contractors</td>
</tr>
<tr>
<td></td>
<td>Tendering process</td>
<td>Main contractors need to focus on value rather than price</td>
</tr>
<tr>
<td></td>
<td>Retention</td>
<td>Trust needs to exist between parties</td>
</tr>
<tr>
<td>Programming</td>
<td>Unrealistic programme times</td>
<td>Parties should be involved in construction projects earlier</td>
</tr>
<tr>
<td>Contractual</td>
<td>Traditional contracts do not engender good working relationships</td>
<td>New contractual documents or less reliance on contracts</td>
</tr>
<tr>
<td>Main contractor's staff</td>
<td>QS's do not encourage subcontract</td>
<td>QS training in communication skills</td>
</tr>
<tr>
<td></td>
<td>Integration</td>
<td>Educate estimators into the demands of these businesses</td>
</tr>
<tr>
<td>Knowledge and Information</td>
<td>Companies do not understand other businesses within the supply chain</td>
<td>Time needs to be taken to learn from partner organisations</td>
</tr>
<tr>
<td>Partnering</td>
<td>Some partnering relationships are executed for the wrong reasons</td>
<td>All employees should be educated in the benefits of partnering</td>
</tr>
<tr>
<td></td>
<td>Many partnering relationships one sided</td>
<td>Main contractors need to offer subcontractor benefits if they are to enter into such relationships</td>
</tr>
<tr>
<td></td>
<td>Some subcontractors lack skills relating to design, legislation and costing that may be required for partnering</td>
<td>Subcontractor training for those lacking skills</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Main contractors do not treat subcontractors fairly</td>
<td>Educate main contractors into the business needs of smaller organisations</td>
</tr>
</tbody>
</table>

Table 3: Barriers to the integration of sub-contractors

Interestingly, these barriers largely mirror what has already been listed in this thesis and emotively described by others as the 'illnesses' of the sector (DETR 1998) 'traditional bad ways of both thinking and practice' (Fischer and Green 2001), the plague (Kagioglou et al. 2000), or blindness of the industry to its failings (Cain 2003). They also largely reflect what has been perceived to be the barriers to clients' aspirations and continuously reiterated over the last 60 years in a variety of industry reviews (see Langford and Murray 2003). Arguably these barriers could equally be described as the characteristics of the construction industry and explainable with reference to that structure. It is precisely this type of argument that can be found in Fernie et al.'s (2003b) description of knowledge sharing. They argue that managerial practice is rooted in a
context and that it is necessary to engage with practitioners interpretations of both context and practice to fully explain the legitimacy of one practice or strategy over another in disparate contexts. These practitioners are not participants in some form of malaise within the construction sector resistant to good ideas. Their practice is shaped by and acts to shape the circumstances they operate within. Context is not so much a barrier but instrumental in legitimising practice and any proposed change – it can equally be described as an enabler as it is a barrier such that it constitutes neither. Its recursive relationship with practice also make nonsense of its description as a barrier.

The changes required to alleviate these barriers in Dainty et al. (2001) are also similarly outlined in the variety of industry reviews in the last 60 years. What differs is the notion that these criticisms and solutions are now directed towards an entity known as the supply chain. It can be argued therefore that practitioners legitimately pursue strategies and adopt managerial practice because for them it makes sense to do so in the context, or their interpretation of it, that they operate to such an extent that they legitimately:

- accept and enter into contracts that will inevitably involve arms-length contractual relationships;
- accept that lowest capital costs win projects and opportunistic behaviour is inevitable (by their clients, suppliers and themselves);
- reject or fail to develop or deploy new technology.

It cannot be assumed that practitioners are dilettantes who need only to be made to understand through better training that such behaviour or action is counterproductive (for clients at least) and correctable through the adoption and use of alternative managerial practice. This would be to miss the contextually embedded nature of their action and its perceived legitimacy. It also largely misses the argument that practitioners are knowledgeable and reflexive.
5.3 Dominant perspectives of supply chain management in construction

The perceived slow rate of application and implementation of supply chain management partially prompted Akintoye et al. (2000) to conduct a questionnaire survey of the top 100 contractors in the sector regarding their opinions on supply chain collaboration and management. Curiously, the survey concluded in part that those in the sector perceived supply chain collaboration and management to be *important or critical* for future success. There therefore appears to be a mismatch between the perception of supply chain management as *important and critical* and, the slow rate of its uptake. Despite this mismatch there are (and have been) a number of sponsored construction management research projects that attempt to bridge this gap. Arguably, the most influential have been the EPSRC sponsored research project 'Building Down Barriers' (Holti et al. 2000; Nicolini et al. 2001), the Logistics Systems Dynamic Group at The University of Wales work on UK private house building supply chains (Hong-Minh 2002), and Loughborough University's EPSRC IMI research project directed towards exploring and developing integrated collaborative design (Austin et al. 2001).

5.3.1 A systems engineering approach

The logistics Systems Dynamics Group at the University of Wales in Cardiff has been highly influential in contributing to the debate about supply chains within the construction sector over the last 8 years. Much of their understanding of supply chains draws on production theories (Towill and Christopher 2002) and in particular systems engineering and business process re-engineering (see Evans et al. 1997; Evans and Towill 1997; Towill 1997). Arguments surrounding the success of these theories in other sectors (Naim 1997) and the well-versed problems of the construction sector (Evans et al. 1997) are used to base their ongoing work to apply these theories to construction. Their recent focus is on implementing and developing supply chain management strategies within the private housing sector, a particular sub context within the construction sector. This last point is rather important since the characteristics of the
housing sector do not tend to be characteristic of the sector as a whole. This sub sector is characterised by greater degrees of stability and significantly more consolidated than the rest of the sector.

5.3.1.1 A systems perspective
They draw on the well-versed systems perspective that the whole is not equal to the sum of its parts and that a set of sub-optimum solutions can never produce a truly optimum solution (Naim 1997). As was uncovered in the review of the mainstream supply chain management literature, systems perspectives pervade amongst all of the dominant storylines of supply chain management. These authors similarly draw from Forrester (1961) and explore the bullwhip effect in supply chains (Hong-Minh 2002; Dejonckheere et al. 2004). This perspective it is argued has informed the manufacturing industry and precipitated its move from functional differentiated businesses to process orientated, integrated supply chains. Such supply chains are highly responsive to market demands and wholly orientated to the needs of their customers. Competing supply chains (Spekman et al. 2002) are accepted as the norm. Indeed business processes or supply chain processes need to be solely geared towards satisfying customers.

This systems perspective geared towards customers however is considered to be absent within the construction industry (Naim 1997). A point that resonates then and still does today with the ongoing dissatisfaction of the clients in the construction sector and their repeated calls for change, not least that reported by Latham (1994), Egan (DETR 1998), Rethinking Construction (2002) and, the Strategic Forum for Construction (2002) reports. Indeed, the DETR report (1998) makes explicit reference to developing recently successful manufacturing strategies within the house-building sector.

5.3.1.2 Supply chain management strategies in housing
Following this rationale, Hong-Minh et al. (2001) outline their work directed towards improving the housing sector by focusing on
opportunities to develop supply chain management strategies. Their starting point is Stevens (1989) three issues considered essential for a fully integrated supply chain: change in attitude; process orientation and; better communication. From their literature review they identify within the construction sector a number of concerns. Notably, a change in attitude or 'mindset' is related to the adoption of partnering in the construction sector:

"Partnership is very much an attitude of mind and one that requires fundamental changes in behaviour that have characterised the construction industry for the last 25 years" (Pokora and Hastings 1995, quoted in Hong-Minh 2002)

Their approach is informed by business process engineering and a recognition that processes: have customers, whether internal or external; cross inter- and intra-organisational boundaries and; must be evaluated from the customers' point of view. It is implied that it is necessary for organisations to have their own house in order before extending the approach beyond the boundaries of the firm and is in line with many others view on the internal supply chain (Stevens 1989; Cousins et al. 1995; Cox 1995; Cox and Lamming 1997; Handfield and Nichols 1999).

Better communication is argued to be related to ideas such as that championed by exchanging personnel across organisational boundaries and the co-location of key project personnel (see Womack et al. 1990; Womack and Jones 1996). Interestingly this last aspect of co-location is argued to be valuable as a learning mechanism associated with (Nonaka 1994; Nonaka and Takeuchi 1995) ideas that centre on the use of socialisation and the conversion of tacit to explicit knowledge. This displays a level of sensitivity to subjective knowledge and socialisation as a mechanism of knowledge transfer (McKinlay et al. 2000; Lanzara and Patriotta 2001; Fernie et al. 2002) within and across projects. Much of this is however rooted in the assumption that project teams can be held together across such projects. Knowledge transfer between industry
sectors that underpins much of the Logistics Systems Dynamic Group’s propositions however would appear to be less sensitive to the recognition of subjective knowledge and any need for socialisation. Arguably, a similar lack of sensitivity is lacking in the Egan report (DETR 1998) and other attempts to import knowledge to the construction sector (see Green et al. 2004).

5.3.1.3 Methods
Hong-Minh et al.’s (2001) empirical work involved the use of what is called a Terrain Scanning Methodology and Quasi Delphi Study Methodology (see Lewis 1998; Childerhouse et al. 1999; Barker et al. 2000; Hong-Minh 2002). The former is used to give a holistic overview of the supply chain, its processes and practices and used as the basis for analysis to understand and determine the nature of the supply chain. The latter focuses on the perceptions of the problems, causes and remedies for the housing industry and involves the use of a projected scenario (in this case a fully integrated supply chain) and an analysis by participants from industry of how they may engineer their way towards that scenario. The goal of the Quasi-Delphi Study methodology is to achieve a consensus among supply chain participants regarding what action is required to attain the improvement necessary to reach the projected scenario.

Their understanding of the supply chain management issues and barriers facing those in the housing sector from the literature review is largely confirmed and supported by their empirical evidence, analysis and conclusions. Their conclusion is that the housing sector presents opportunities for the adoption and use of supply chain management and those organisations need to go through a supply chain change methodology like the use of TSM and Quasi Delphi.

5.3.1.4 Summary
The difficulty of achieving the above aspirations lies in the assumption that supply chains are stable and that project participants can be held together across a number of projects. Whilst continuity of workload and
stability within supply chains delivering or producing X number of houses over a period of time may exist, such project conditions are largely absent within the wider context of the construction sector. This methodology also largely ignores the need to root any understanding of current or future scenarios in a context. Questions surrounding what structures reflect and reinforce integrated supply chain management remain outwith the analysis. It is taken for granted that the current scenario is undesirable and that organisations are both self-motivated and perceive potential rewards in making the changes recommended – it is assumed that it resonates with their interests (Hodder 1998). Undoubtedly, such change will reflect the changes desired by clients (DETR 1998) and resonates with Briscoe et al. (2004) and Love et al.’s (2004) understanding of the clients' role. It does not however demonstrate an understanding of why construction organisations currently organise and operate.

Supply chain management is assumed to be the way forward for those in the construction sector. The starting point appears to be one that accepts this premise and engages in ways to implement supply chain management within the construction sector. This thesis is informed by an assumption that the utility of supply chain management for those in the construction sector will ultimately be determined by practitioners’ interpretations and actions. These interpretations will also be informed by an understanding of the legitimacy of supply chain management at a strategic level.

5.3.2 Building down barriers
The building down barriers project was perhaps the epitome of what Briscoe et al. (2004) would consider to be a highly influential client in determining supply chain integration. The clients were the Ministry of Defence (MoD) and the UK Department of the Environment, Transport and the Regions (DETR) with Defence Estates acting on their behalf. These public sector clients are regular procurers of products and services from the construction industry and arguably form a fraction of the sector's largest client by far – the public sector. Defence Estates (DE) also have
considerable expertise and experience of working with the construction sector. Two main contractors were appointed by DE to support a client sponsored initiative which is now colloquially known throughout the sector as the 'building down barriers' initiative. The contractors were responsible for delivering separate pilot-projects under the building down barriers initiative that related to the delivery of recreational and leisure facilities for the MoD.

Justification for the initiative is rooted in the well documented client dissatisfaction with the construction sector and the need to adopt alternative managerial practices to alleviate problems such as arms-length contractual relationships, opportunism, conflict and project performance. What made this initiative significantly different from most attempts to address these problems was the involvement of a number of social scientists through the active engagement of The Tavistock Institute with the initiative. The Tavistock Institutes previous involvement with, and assessment of, the construction sector played a central role in the development of the building down barriers initiative. Prior research and perspectives of problems such as Communication (Higgins and Jessop 1965), interdependence and uncertainty (Tavistock Institute 1966) in the construction sector and, the organisation of work rooted in other sectors (Miller and Rice 1967; Neumann et al. 1995) is drawn upon in outlining the problem and defining the building down barriers initiative scope.

5.3.2.1 Supply chain issues
The complexity of interdependencies and interfaces that exist on many construction projects are considered to be beyond the control and comprehension of designers to such an extent that:

"The whole process of designing and constructing is therefore characterised by discovering interdependencies, which makes for uncertainty. The problem with the centralised model for coordinating design, construction and supply is that it is ineffective in managing these interdependencies" (Nicolini et al. 2001)
If that in itself is not disappointing enough, (Nicolini *et al.* 2001) note that this problem is considerably exacerbated by a lack of good management of the supply chain. The dominance of contracts being let out on a competitive tendering process, being highly detailed with respect to responsibilities and penalties is considered to be central to the dominance of arms-length contractual relationships in the construction sector. Such relationships are argued to distract contractors, designers and suppliers from delivering the project and focuses attention on defending against potential and actual claims and, any expansion beyond contracted responsibility or liability.

Therefore, the main objective of the Building Down Barriers initiative was to address the contractual and relational issues inherent in current procurement strategies. The nature of the problem was considered to be socio-technical (Cherns 1976; Cherns and Bryant 1983; Cherns 1987). The building down barriers approach focused on clustering (see (Holti *et al.* 2000; Nicolini *et al.* 2001; Cain 2003) as the proposed solution to these socio-technical problems and was conducted as an action research project (see Stringer 1996; Greenwood 1998).

**5.3.2.2 The building down barriers approach**

The approach drew upon a variety of current tools and techniques to support its development and/or implementation such as: ADEPT (see for example Austin *et al.* 1994; Austin *et al.* 1999; 2000) as a way of identifying critical design interdependencies and interfaces; Value Management (see Male *et al.* 1998a;1998b) to improve design and drive out what was called unnecessary costs; and Risk Management. The approach also introduced a number of new techniques such as Target Costing (Nicolini *et al.* 2000; Broome 2003), technology clusters (Gray 1996) and, a systems perspective to procurement (Lahdenpera 1995) and the organization of the project organisation. The approach also involved the use of Prime Contracting as the preferred procurement approach.
Whilst prime contracting is a relatively recent form of procurement in the construction sector it has been used extensively within the aerospace sector (Fernie et al. 2003b). It involves the appointment of a prime contractor who acts as a single point of responsibility for the client. The prime contractor is responsible for the management, procurement and maintenance of the facility. The building down barriers approach in this procurement arena then arguably offers a way for the prime contractor to integrate all the activities of a preassembled supply chain (Holti et al. 2000).

Prime contracting therefore represents an opportunity for the prime contractor to break down traditional process discontinuities between design, construction and aspects of facilities management. In this sense the prime contractor becomes what might be termed a 'systems integrator' responsible for the strategic management and delivery of a conceptual design, construct and maintain project. Their objective is to specify within the overall design strategy: design interfaces; constraints on construction methods and; cost parameters. This forms the basis of detailed design, prices and construction methods and plans to be delivered by the sub-systems (Holti et al. 2000). It is also instrumental in defining what clusters are necessary. Projects inevitably represent a variety of technical requirements that will shape and determine the nature and characteristics of clusters.

Figure 18: Cluster model of project organization (adapted from (Holti et al. 2000))
Sub-systems are argued to represent mini design, construct and maintain projects that are typically referred to as clusters or technical clusters (Nicolini et al. 2001) and have a cluster leader. A cluster model of the project organization is depicted in Figure 18. Tools and techniques described above are argued to be used by the system integrator/prime contractor and cluster leaders within their integrated systems, integrated sub-systems and across sub-systems.

Clusters are also synonymously described in the building down barriers literature as supply chains that necessarily need to be based upon long-term relationships focused on a common set of business goals. The value of the supply chains is also considered to be in their cohesiveness across projects where they compete in a clearly identified market providing facilities, services and products to a clearly defined set of clients. In this sense the building down barriers approach is similar to calls in the mainstream supply chain management literature for competing supply chains within a defined market (Spekman et al. 2002; Lambert, and Cooper 2000; Lambert et al. 2001; Vokurka et al. 2002). Whilst it is clearly difficult to argue against such a vision being beneficial for stakeholders in the construction sector it cannot be assumed that the sector is characterised by such a utopian structure to facilitate such change. The sector is not, has never been and is unlikely to ever reflect a predictable market providing facilities, services and products to a clearly defined set of clients. If the adoption of supply chain management is based on such stability then the question must be how the sector can restructure to present stability to those within its structure.

5.3.2.3 Summary
Holti et al. (2000) and Nicolini et al. (2000; 2001) conclude that competing supply chains characterised by long-term strategic relationships remain an aspiration for the construction sector. The building down barriers literature concedes that the effective configuration of long-term supply chains for different kinds of construction is an issue that requires further research (Holti et al. 2000). This is similarly supported by more recent
arguments for improved long-term supply chain relationships in the sector (see Love et al. 2002; Humphreys et al. 2003). Whilst the building down barriers approach is clearly accepted as an exemplar of how project supply chains may be managed in specific circumstances it still remains under-developed with respect to the sustainable management of supply chains or networks that exist outwith the context of project management. Clearly, clients with an ongoing engagement with the construction sector for repeat orders are afforded the opportunity to support project supply chains and the development of strategic relationships that exist outwith projects. However, questions surrounding how to keep supply chains together between projects that are not supported by such continuity of work remain unanswered. This resonates considerably with similar debates centered on the development of project partnering and strategic partnering. The latter also still largely remains an aspiration within the construction sector. In the opinion of this author, the BDB initiative has contributed to the debate on project organization, procurement systems, interdependencies and project partnering but, is less persuasive as a contribution to the development and implementation of supply chain management within the construction sector. There is little appreciation or sensitivity relating to the competitive markets within which organisations compete. This also arguably contributes to the structure, operation and practice of construction companies that cannot remain outwith any analysis of the relevance, development or implementation of supply chain management in any sector.

Interestingly, although the building down barriers project is largely considered inseparable from the concept of supply chain management (Holti et al. 2000; Nicolini et al. 2001; Cain 2003) in the construction sector there is a surprising absence of reference to the mainstream supply chain management literature or theories. Despite the book title ‘The handbook of supply chain management’ in Nicolini et al. (2001), no definition of supply chain management appears and the phrase itself features rather sparsely in its content. Despite this, the use of language such as integration, collaboration, strategic partnering, customer focused
supply chains, collaborative working, long-term alliances and best practice resonates considerably with the mainstream supply chain management literature. Much of this is however focused on the project as a unit of analysis and largely assumes continuity of workload. To date, there has appeared little evidence to support any claims that the building down barriers approach has proved instrumental in developing and implementing a supply chain management approach for the construction sector. Their work has however been taken forward by the MoD who now regularly use prime contracting as one of their preferred methods of procurement. Recent research aimed at understanding the use of integrated procurement strategies such as prime contracting indicates that alternative managerial practice associated with collaborative working and the development of trust has as much to do with a change in context than it does with any move towards the implementation of best practice or supply chain management initiatives (Fernie et al. 2004). Much of this change in context is related to stability, continuity and clearly identifiable markets with specific requirements.

5.3.3 Integrated collaborative design
The integrated collaborative design research project was a combined industry and academic initiative between Loughborough University and twelve construction industry collaborators. Their work coincided with the publishing and circulation of the Egan (DETR 1998) report and principally builds upon previous research related to developing a tool to understand design interdependencies and interfaces called ADePT (Austin et al. 1994; Austin et al. 1999; 2000) during conceptual design.

5.3.3.1 A Process driven perspective on supply chain management
The ADePT tool was largely based upon prior work that sought to map the design process for the purpose of making it easier to manage and is closely related to other process initiatives such as the Generic Design and Construction Process Protocol (Kagioglou et al. 2000; Wu et al. 2001). It appears that the drive towards mapping and modelling design information flows is highly dependent on disparate design organisations.
(a design chain) to collaborate. The mapping arguably needs to be holistic and therefore encompasses a large number of design organisations that typically send and receive information constantly during the iterative design process. Focussing design solutions to meet clients' demands similarly requires collaboration between these design organisations to adopt and use of VE/VM principles. Thus, three interrelated principles of integrated collaborative design largely demonstrate the ICD approach and are summarised in Figure 19.

![Diagram](image)

**Figure 19: The three interrelated ICD principles**

It is the second principle which is of especial interest to this thesis - the notion of adopting supply chain management practices. Supply chain management is defined as:

"A collection of management practices underpinned by a philosophy that seeks to bring together resources drawn from a number of different organisations who together form supply networks and supply chains. The philosophy requires organisations to look beyond their organisational boundaries in
BEST COPY

AVAILABLE

Variable print quality
order to optimise the overall delivery of a product or a service to end-users/customers". (Austin et al. 2001)

Supply chain management is viewed more as a framework and reflects, albeit not explicitly, holistic thinking, a resource based view of the firm, systems thinking, and a focus on the end-users/customers. Implicit in this definition is also a philosophy that would appear to assume collaboration and integration between organisations and individuals and that all members of the network or chain share this philosophy. The development of good business relationships rooted in a business, not a project, domain is seen as a key tenet of supply chain management in the construction sector. Such relationships are argued to facilitate a move away from constructions long-held adversarial culture and instrumental in changing attitudes from the traditional to collaborative in nature – see Table 4.

<table>
<thead>
<tr>
<th>Collaborative project domain relationship</th>
<th>Traditional project domain relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4: Characteristics of each end of the relationship continuum**

The collaborative project domain relationships are noted to be embodied in the ICD approach. In the absence of these relationships it must be assumed that the ICD approach would suffer to deliver the aspirations claimed for its use. If this is the case then the question that must be
asked is how such relationships can be achieved and to what extent are these relationships realisable in the current structure of the industry within which organisations compete, operate and organise. There is however, little evidence to support any claims by ICD that the approach directly relates to the achievement of such relationships. On the contrary it appears it is dependent on the existence of such relationships. There is also little exploration of what kind of industry structure would support the approach advocated by ICD. Similar to the building down barriers, it is difficult to argue against the benefits of ICD to the stakeholders in the construction sector. But, like the BDB approach, ICD is based on an assumption that stability and continuity between organisations is in place. This is however not the case and is highlighted by Ireland (2004) to be a major concern for organisations in the construction sector when determining the appropriateness of relationships with clients and suppliers. If the adoption of supply chain management is based on such stability then the question must be how the sector can be stabilised. Such difficult questions and issues however largely remain outwith the body of work associated with ICD. Whilst their contribution to improving design is substantial and engaging, their work does suffer from taking an acontextual perspective. In this respect ADePT is a highly useful design tool that will be limited in its application due to its reliance on an interdependent, collaborative, cohesive and holistic supply chain (or network) – characteristics that remain an aspiration in the construction sector.

5.3.3.2 Supply networks, supply and design chains: a hierarchy
Supply networks exist outwith the context of projects but nevertheless bind organisations together. The necessity to have a network is argued to be rooted in the disparate demands of project that are either functionally or geographically different. Thus not all members of the supply network will be drawn down to form a project specific supply chain. Similarly, not all members of the project supply chain will be drawn down to create a design chain. It is tempting to conclude that the process discontinuities
between design organisations may well be broken down in this model but will it also act to reinforce the process discontinuities between design, construct and FM – a fundamental tenet of much of the recent reviews of the construction sector and central especially to the Egan report’s (DETR 1998) call for collaboration and integration in the supply chain. However, the ICD project was fundamentally focused and driven by concerns regarding the interdependencies between design organisations and the process management of design and must be considered as a valuable contribution in this arena.

5.3.3.3 Summary
The conclusions of the ICD research project culminated in their ICD approach which is more aspirational in content than descriptive of achievements in the integration of design and the adoption and diffusion of supply chain management in the construction sector. The notion of a supply network demonstrates a contextual sensitivity to the project specific demands placed on the players in the sector. However, the notion of a supply network rooted in a business domain and supported by ongoing long-term strategic relationships largely reflects a myriad of previous research that has posited such relationships as an aspiration and demonstrates little contextual sensitivity.

5.4 Chapter summary
There are a number of significant contributions to understanding supply chain management within the construction management literature (see for example Dainty et al. 2001; London and Kenley 2001; Cox and Ireland 2002; McGeorge and Palmer 2002; Briscoe et al. 2004). These contributions however have not overtly explored the interpretation of supply chain management theory per se by industry practitioners or explored the role of context in their analysis or models of supply chain management implementation or application. Indeed, context is largely perceived to be a barrier to aspirations of change rather than presenting both enabling and constraining forces on for change. This thesis is however designed to explore industry practitioners’ interpretations of supply chain management and is particularly sensitive to the role of
context in shaping and being shaped by the introduction of supply chain management.

It is curious that construction management researchers have a tendency to limit the debate on supply chain management by not engaging with and reflecting upon the mainstream management literature. There is therefore little debate surrounding perspectives of supply chain management theory such as logistics, purchasing and competitive positioning. Such theory has not been overly drawn upon as the basis of informing research aimed at exploring supply chain management in the construction sector. Nor, is this body of literature drawn upon as the basis of research directed at developing and contributing to existing theories or the development of alternative theory.

This tendency is perhaps reflected in the dominance of debate, discussion and research directed at 'managing' supply chains rather than engaging with supply chain management theory *per se*. The level of analysis of research in the construction sector on supply chain management also tends to remain at the dyadic level and mirrors much of the previous research in the sector directed at partnering.

Drawing on the strategic and operational perspectives of supply chain management theory it is clearly evident that the operational focus on the optimisation of flows dominate in the construction management literature. In this sense it is unsurprising that there is a tendency to focus on projects as the unit of analysis for supply chain management and the efficiency of the project process. There is therefore a considerable body of work devoted to achieving such project efficiency in the supply chain via the introduction of familiar concepts such as collaboration, integration and communication. This body of literature is however largely aspirational and prescriptive.
There is therefore a marked difference between mainstream management and organisation studies literature and, the contributions from the construction management research community. Despite this, Figure 20 highlights the main themes and issues arising from the review in this chapter and forms the basis of supply chain management theory in the construction sector.
6 CHAPTER 6: METHODOLOGY AND RESEARCH DESIGN

6.1 Introduction
The following chapter outlines the direction chosen for the methodology and research design. The chapter draws on an understanding of the need for and content of a contextual approach to inquiries into supply chain management in the constructions sector, the aims and objectives of the research and an understanding of supply chain management theory and perspectives. The structure of the chapter attempts to follow a particular orthodoxy in thesis writing and begins by outlining the underlying assumptions associated with codified paradigms of inquiry. The chapter then goes on to explain the research design adopted for this research and to outline a number of propositions based on a contextual approach to understanding supply chain management. This inevitably involves an exploration of research methods and an explanation of that adopted for the purposes of the research.

The chapter not only contributes to an understanding the research problem and questions but also draws directly from them in guiding the case study research design. Indeed this chapter draws upon chapters 2-5 in helping develop theoretical propositions as the basis of selecting case studies and analytical generalisation. The chapter also contributes to the aims of the research and in particular helps to facilitate the comparison of theory and practice (theory testing) that underpins this thesis and provide explanations for how practitioners make sense of supply chain management.

6.2 Alternative knowledge claims or paradigms of inquiry
Paradigms of inquiry (Burrell and Morgan 1979; Fitzgerald and Howcroft 1998; Lincoln and Guba 2000; Merten et al. 1998; Patton 1990) or knowledge claims (Creswell 1994; 2004) define for the inquirer:
"...what it is they are about, and what falls within and outside the limits of legitimate inquiry" (Denzin and Lincoln 2003)

Similarly, Miles and Huberman (1994) clearly make the case for such reflection:

"It is good medicine, we think, for researchers to make their preferences clear. To know how a researcher construes the shape of the social world and aims to give us a credible account of it is to know our conversational partner" (Miles and Huberman 1994)

Paradigms of Inquiry therefore represent an allegiance to particular assumptions regarding ontology, epistemology and methodology (see Lincoln and Guba 2000; 2003; Maggs-Rapport 2001; Denzin and Lincoln 2003) by researchers which cannot be taken for granted by readers and must form part of any explanation of the research undertaken. The following broadly outlines the commonly accepted definitions of ontology, epistemology and methodology and represents the dominant choices facing researchers:

1. Ontology represents answers to the questions about the nature of reality and, what is there that can be known about it? (Denzin and Lincoln 2003). From a social science perspective ontological assumptions are concerned with whether the reality to be investigated is external to the individual – imposing itself on individual consciousness from without – or the product of individual consciousness; whether ‘reality’ is of an ‘objective nature, or the product of individual cognition; whether ‘reality is a given ‘out there’ in the world, or the product of one’s mind. (Burrell and Morgan 1979)

2. Epistemology represents answers to the questions about how we know the world or, what is the nature of the relationship between the knower or would-be knower and what can be known (Denzin and Lincoln 2003). From a social science perspective
epistemological assumptions concern how one might begin to understand the world and communicate this as knowledge to fellow human beings....whether knowledge is something which can be acquired on the one hand, or is something which has to be personally experienced on the other (Burrell and Morgan 1979)

3. Methodology represents answers to the questions about how we gain knowledge about the world or, how can the inquirer (would-be knower) go about finding out whatever he or she believes can be known? (Denzin and Lincoln 2003). From a social science perspective methodological assumptions are directly related to ontological, epistemological and human nature assumptions. Each one has important consequences for the way in which one attempts to investigate and obtain ‘knowledge’ about the social world......[they] are likely to incline social scientists towards different methodologies. (Burrell and Morgan 1979)

Burrell and Morgan (1979) add a fourth set of assumptions called human nature. This is argued to be particularly concerned with the relationship between human beings and the environment. The main thrust of the extremes of views here are whether human beings respond to the environment or the other way around. Are human beings the creators of their environment or are they conditioned by the environment. This dichotomy is frequently referred to as the opposing views of voluntarism and determinism. In sociological theory they represent opposing functionalist/structuralist and interpretative views.

The above order of assumptions is also argued to reflect a logical primacy (Burrell and Morgan 1979; Denzin and Lincoln 2003). These elements of a paradigm or knowledge claims are therefore argued to be inseparable (Burrell and Morgan 1979) such that accepting one set of assumptions for ontology, epistemology or methodology acts to reject the others and vice-versa - incommensurability. A chosen methodology will also act to govern the choice and use of methods for research (Creswell
For Creswell (2004), methodology is wrapped up in what is called the strategy of inquiry. It is therefore important within any research project to explore and articulate the assumptions that underpin researchers chosen knowledge claims or paradigm of inquiry. It is equally important to articulate the chosen strategy of inquiry that supports claims to use a variety of approaches to research such that research methods and design can be articulated. Paradigms of inquiry are therefore a crucial aspect of how a researcher tells the 'story' of the research. It informs the reader of the philosophical roots and position that underwrite the research, what is researched and how.

6.2.1 Typology of Inquiry Paradigms and knowledge claims

Whilst it is necessary to concede that there have been a number of lively debates within the construction management research community on the legitimacy of various paradigms of inquiry (see Seymour and Rooke 1995; Raftery et al. 1997; Runeson 1997; Seymour et al. 1997; Harriss 1998; Seymour et al. 1998; Wing et al. 1998), they have undoubtedly tended to be rather dichotomous (Blismas 2001) and very much reflect the dualisms in sociological paradigms. These debates took place at a variety of levels such as ontological, epistemological and methodological and were largely influential in challenging the construction management research community to reflect upon the legitimacy of one paradigm over another. They are also very similar to the strands of debate used by Burrell and Morgan (1979) to draw out a scheme for analysing the assumptions of the social sciences – see Figure 21.
As Blismas (2001) notes the legitimacy of realism over relativism or vice-versa is rejected by some researchers in the construction management community who are argued to take a rather more pluralistic and ecumenical stance on methodological issues (see for example Raftery et al. 1997; Barrett and Barrett 2004). However, these stances largely maintain the incommensurability thesis and present a number of options competing for the researchers' attention and/or resonance.

6.2.2 The researcher as a paradigm of inquiry

However, whilst this process of problem definition and the accepted logic of using one paradigm over another may appear to be straight forward, it is like most abstract processes – its application in practice is frequently problematic. The author of this thesis as a researcher was confronted with a number of questions: Do researchers objectively choose assumptions underpinning paradigms; are they pre-disposed to certain assumptions or do they post-rationalise assumptions to suit the research question proposed and research carried out? What comes first, a paradigm of inquiry or a research question? Do we deduce research questions about known or unknown phenomenon from an allegiance to a particular paradigm of inquiry? Does the phenomenon under study dictate the appropriateness of the paradigm of inquiry? Does the context worked in, training received, experience and colleagues worked with shape an
allegiance to particular paradigms of inquiry or the development of particular research questions? How does a researcher mitigate against subjective interpretation? After all, at the heart of any research act is a *socially situated ‘researcher’* (Denzin and Lincoln 1998; 2003):

"*Behind these terms [ontology, epistemology and methodology] stands the personal biography of the gendered researcher, who speaks from a particular class, racial, cultural, and ethnic community perspective. The gendered, multi-culturally situated researcher approaches the world with a set of ideas, a framework (theory, ontology) that specifies a set of questions (epistemology) that are then examined (methodology, analysis) in specific ways. Every researcher speaks from within a distinct interpretative community, which configures, in its special way, the multicultural, gendered components of the research act*" (Denzin, and Lincoln 1998)

A researcher therefore brings to the act of research a host of personal experiences and assumptions (Creswell 2004) rooted within and sympathetic to a particular context — an 'ontological affinity' (Pozzebon 2004). Similarly, Patton (1990) notes in his discussion of competing inquiry paradigms:

"*Methods decisions tend to stem from disciplinary prescriptions, concerns about scientific status, old methodological habits, and comfort with what the researcher knows best. Training and academic socialization tend to make researchers biased in favour of and against certain approaches*" (Patton 1990)

In this sense, research questions are framed within a particular paradigm of inquiry that resonates with a researcher’s experiences, assumptions and context. It is therefore necessary to be aware of and to reflect upon such influences on the way research problems and allegiances to
paradigms of inquiry are framed. They are not necessarily objectively framed but rather subjectively influenced. In framing the research questions and articulating an appropriate paradigm of inquiry, iteration is most likely to have occurred between these largely interconnected aspects of research design. Therefore, whilst a typical thesis may give the illusion of sequential logic with a beginning that flows logically through to an end, actual processes of framing questions and articulating a relevant paradigm of inquiry are most likely messy, iterative and dynamic. From the perspective of this author, the move during the course of this thesis from one university to another added to the complexity of framing the research questions since the situated context of the author had altered significantly.

Despite this, research designs and approaches are still argued to be underpinned by ontological, epistemological and methodological assumptions coded in paradigms (Fitzgerald and Howcroft 1998; Blismas 2001). For researchers, the choice of one particular paradigm of inquiry relates to the acceptance of one side of the dualisms that underpin such paradigms (see Burrell and Morgan 1979). In doing so they are simultaneously locked into rejecting the other side of such dichotomised thinking since the paradigms are argued to be incommensurable (Jackson and Carter 1991).

6.2.3 Incommensurability
The thesis of incommensurability however has not remained unchallenged by recent organisation scholars (see for example Willmott 1993; Weaver and Gioia 1994; 1995; Scherer and Steinmann 1999) and is also largely challenged by a branch of social theory underpinned by Giddens (1993) structuration theory. The duality of structure and the recursive relationship between structure and agency dismisses the hegemony of one paradigm over another. Indeed they are argued to be interdependent (Weaver 1994). Structuration theory is therefore argued to offer methodological and theoretical pluralism for organisational inquiry (Weaver 1995). However, this acceptance of the interplay between
structure and agency at a meta-theoretical level does not necessarily
discount the value of adopting paradigms of inquiry such as that
characterised by interpretative or functionalist sociologies. On the
contrary, by accepting that ontologically each does not claim to provide
the only knowledge (Weaver 1995), their individual adoption is still valid.
This is what Weaver (1994) describes as bracketing where interpretativist
and structuralist paradigms of inquiry are argued to be conceptually
distinct yet necessarily interdependent (Jackson 1999). However, this
does not as Jackson (1999) points out render structure and agency as
irreducible to one another where structuration itself becomes the meta-
theory. It must also be noted that there are a number of criticisms of
structuration theory relating to: ontological conflationism, ontological
depthlessness, ontological oscillation; a shift towards the dominance of
agency (see Willmott 1998; 1999) and; the definition of structure and
accusations of reductionism (Jackson 1999). Much of this criticism is
however directed at explicit aspects of Giddens structuration theory per
se and does not in itself reject entirely the idea of duality within
sociological and organisational inquiry (Jackson 1999).

6.2.4 Accepted paradigm of inquiry
Notably for this thesis, structuration theory is largely drawn upon by
organisation researchers and theorists such as Dimaggio and Powell
(1991a; 1991b) and Weick (1995) to underpin their calls for contextual
approaches. This thesis also draws on structuration and sensemaking
and holds that participants in organisations are contextually sensitive and
draw upon the recursive relation between structure and agency in making
sense of their experienced reality. It is this sensitivity that is argued in this
thesis as a necessary aspect of exploring and understanding supply
chain management theory and practice in the construction sector.

However, from a meta-theoretical level, the research reported here has
been conducted (and bracketed – see Weaver 1994) from a particular
perspective. The author freely admits that the process of conducting this
research from initiation to completion has involved many shifts and
iterations between aspects of the research and presented many moments of reflection, challenge and choice at an ontological, epistemological and methodological level. What has perhaps prevailed is an ontological affinity (Pozzebon 2004) or a leaning towards the positivist end of the continuum between positivism and constructivism. Reality is thus largely accepted as being of an ‘objective nature and knowledge something which can be acquired (Burrell and Morgan 1979). Some might argue that researchers should have and demonstrate a freedom to address a problematic world from any number of paradigmatic choices. This author views such a position as rather simplistic and naïve. Researchers, as noted earlier, exist in a context and are both shaped by and shape the context they populate. The author concedes that the context within which most of the research reported in this thesis was carried out had an affinity with a largely positivist perspective. The research therefore leans towards accepting the assumptions underpinning a positivist perspective.

Notably however this does not indicate that the author rejects constructivism. On the contrary, the author concedes to the argument put forward by Weaver (1994) and (W.A. Jackson et al. 1999) that for a more comprehensive understanding of social theory it is necessary to engage with what they describe as realist and relativist perspectives and the interconnectivity between realism and relativism. The research in this thesis from a meta-theoretical perspective is however bracketed and forms only one aspect of achieving such a possible broader understanding.

6.3 Methodology
As noted earlier, methodology represents answers to the questions about how we gain knowledge about the world or, how can the inquirer (the author of this thesis) go about finding out whatever he believes can be known? (Denzin and Lincoln 2003). Similarly for Silverman (2001) methodology collectively refers to the researchers choices regarding research methods, data collection methods, analysis, etc. This, it is argued, could be labelled very broadly such as ‘qualitative’ or narrowly
such as ‘interpretivism’ (see Miles and Huberman 1994). Methodology is also described as being:

"Like theories, methodologies cannot be true or false, only more or less useful" (Miles and Huberman 1994)

The emphasis on methodology is therefore laying bare the rationale for, and the choices made, during the research act as a way to ensure that the usefulness of the methodology is maximised through considerable thought and reflection. This is best captured by (Yin et al. 1994) who remarks that the goal is to avoid gross misfit and concedes that methodologies are ultimately either more or less useful. In this sense, methodologies whilst never wrong must be transparent and defendable. For Blismas (2001), methodology is therefore all about describing and explaining in detail the research design, methods chosen and research process and is a view shared by this author despite misgivings regarding its rationality.

6.3.1.1 Model of the research process
A broad understanding of the research process addresses the question of the relationship between the data surrendered by the population and theory. Reflecting upon chapter 1 and the research problem and questions it is apparent that the research is directed towards theory testing. In this sense does the theory of supply chain management make any sense to the practitioners within organisations competing and operating within the construction sector? It is therefore clear that the research is dominated by theory testing. This relates to a model that is described as deductive and contrasts with either an inductive or a combined model (see Fellows and Lui 1997). Whilst it is conceded that most research processes involve both inductive or deductive (see Blismas 2001), the research in this thesis is conceded to be dominantly deductive.
6.3.2 Research methods: avoiding gross misfit

Whilst there are undoubtedly constraints placed upon the choice of methodology from philosophical considerations such as ontological and epistemological orientation (Burrell and Morgan 1979), it must also be conceded that the research questions asked, resources available, control and contemporary or historical perspective also place a number of constraints on the choices facing researchers (Yin 1994; Leiringer 2003; Creswell 2004). These constraints or guiding frames of reference for choice are discussed below as a way to avoid gross misfit (Yin 1994).

6.3.2.1 Reflection on research problem: guides and constraints

Methods utilised by construction management and the wider organisational researchers are many and varied and suggest and support claims of methodological pluralism within the discipline (Wing et al. 1998). This is not surprising since construction management embraces a host of interrelated professions and disciplines that present a variety of problems equally open to investigation via methods evolved from the social or natural sciences. This methodological pluralism is convincingly argued by Raftery et al. (1997) as both an opportunity to throw off the shackles of dichotomous thinking and as a challenge to construction management researchers to think more pragmatically about the relationship between problem and method:

"What we are advocating is, and we claim no novelty to the idea, that researchers in the construction field should conduct research, as any perceptive researcher would, by defining the problem and then applying the most appropriate method chosen from an unconstrained and wide range of available approaches" (Raftery et al. 1997)

Thus, following (Yin 1994) and supported by Miles and Huberman (1994), Raftery et al. (1997), Leiringer (2003) and Creswell (2004) it is first necessary, in laying bare the choices made by this researcher, to begin
by revisiting and reflecting upon the content of the research problem and question (P1 and Q1) and the main objectives of the research (O1-O5) as a way to evaluate research methods that best fit:

P1: The assumptions that underpin the calls for change in the construction sector are acontextual and atheoretical. They fail to engage or resonate with the experienced reality of practitioners operating within organisations in the construction sector. Recent calls for change regarding the adoption of supply chain management in the construction sector are underpinned by these assumptions.

Q1: How do practitioners within construction organisations make sense of supply chain management?

O1: Explore and highlight contextual approaches for understanding managerial practice that challenge notions of the simplistic transfer and relevance of supply chain management to the construction sector.
O2: Develop a broad theoretical understanding of supply chain management, key issues and concerns from organisation studies and mainstream management literature as well as the construction management literature.
O3: Offer an explanation of how practitioners within construction organisations make sense of supply chain management.
O4: Compare, contrast and highlight tensions between O2 & O3.
O5: Draw out conclusions, limitations and recommendations from the research.

As noted in the introduction chapter, the scope of this study is to generate an understanding of supply chain management that is rooted in construction organisations. The research problem is therefore focused on engaging with and understanding the reality (Walsham 1993) of supply chain management in construction from a practitioner's perspective.
Perhaps one of the most striking features of the research problem and objectives highlighted above is the need for sensitivity to context to play a central role in the research. This is not a normative research project that has set out to make recommendations for the implementation of supply chain management. The research focus is on engaging with practitioners' sensitivity to context in interpreting supply chain management as a way to understand the relevance of supply chain management to organisations in the construction sector. The universalistic assumption regarding the adoption and transfer of supply chain management, as previously stated, does not form any part of this research reported in this thesis. 'Engaging with practitioners' and seeking to draw on their perceptions of 'real-life context' are pivotal themes running through this research. These themes inevitably play an inflated role in the methodological choices made to avoid *gross misfit* (Yin 1994).

Reflection on the research problems also reveals that the content of the research is largely contemporary where the scope for control exercised by the researcher over actual behavioural events is to all intents and purposes – nil. The questions inherent in the research problem also largely reveal 'how' type of questions. 'How' practitioners make sense of supply chain management is an explanatory question and contrasts with more exploratory or descriptive forms of questions (see Yin 1994). It must also be noted that the research is constrained by the resources a part-time PhD student can commit to such research and, the resources that can be sourced from organisations in the construction sector interested and motivated to support such a study.

### 6.3.2.2 Research method: rationale and selection

With these guiding references and constraints in mind, a review of the organisational research literature reveals a number of dominant research methods (Blismas 2001). These include action research, case study, experiments and surveys. These research methods present the opportunity for researchers to conduct (and draw upon considerable
intellectual support) rigorous inquiry although, as already stated, there is likely to be greater utility in some rather than others depending on the guides and constraints informing the content of the research. What is required is a process of exploring advantages and disadvantages of research methods in light of these identified guides and constraints to avoid misfit. This is what Bryman (1989) describes as a trade-off between choosing one design rather than another and concurs with the view of best fit rather than a perfect match. A review of these methods led the author to select case study as the preferred research method. The evaluation of competing research methods and rationale of the selection is detailed below.

6.3.2.2.1 Experiments
Experiments as noted by Yin (1994) below in Table 5 need control over behavioural events. The experimental research method has its roots in disciplines such as physics and is traditionally performed under laboratory conditions. This however does not preclude the use of experiments from a social research context (see Brewer and Hunter 1989). They rely on a logic that flows from controlling some variables whilst manipulating others. This would largely be the case for either 'true' or 'quasi' experimental designs such as that drawn upon by Campbell et al. (1988). The observed effects of experiments are argued to lead to significant claims for causality between these identified variables. Without such control over variables, hypothesis testing and, the ruling out of rival hypothesis however become impossible (Campbell et al. 1988; Brewer and Hunter 1989). Experimental designs also tend to strip out the contextual variables which the research seeks to engage. This reduces, through a bounded view of phenomenon (Blismas 2001; Fellows and Lui 1997), the ability to take a more holistic view of how practitioners make sense of supply chain management. Experiments are therefore not a 'good fit' as a research method for addressing the research in this thesis and thus not favoured over case study mainly on the basis of 'control' required.
6.3.2.2.2 Surveys
Surveys on the other hand, do not require the same level of control over behavioural events as that demanded by experiments but do favour research questions that are more exploratory in nature Yin (1994). These types of questions do not reflect the questions being asked in this thesis that are more explanatory in nature. Surveys tend to be focused on collecting data, using a standardised measure (questionnaire), on a number of variables with a goal of examining such data to determine patterns amongst these variables (Fellows and Lui 1997). One of the notable drawbacks of surveys is the inability to alter or react to changes in understanding the phenomenon under study over the course of the investigation. It is rigid in this respect and not open to an unfolding emergent understanding of phenomenon over the course of a study (Leiringer 2003).

Surveys are also predominantly reliant on statistical methods for data analysis to determine such patterns. Strong claims of causality similar to that in experiments cannot be claimed through the use of surveys since causality must be inferred (Bryman 1989). The main purpose of conducting surveys is noted by Leiringer (2003) to be focused on drawing inferences from populations within which a phenomenon occurs rather than on the social context within which the phenomenon is embedded. Surveys are therefore less useful for studies that are concerned with contextual sensitivity. Whilst surveys are widely accepted and used in social research, and arguably in construction particularly (Blismas 2001), they are less useful for the purposes of the research intended in this thesis.

6.3.2.2.3 Action research
Action research aims to contribute both to the concerns of practitioners in a real situation and to the development of knowledge by joint collaboration within a mutually acceptable framework (Rapoport 1970; Stringer 1996; Whyte 1991). As such, action research is essentially 'problem driven' in response to both researchers’ and practitioners views
of which problems or phenomenon are of mutual interest. Such research therefore sets out to affect change by addressing such problems and phenomenon and actively involves the researcher (see Gummesson 1991 cited in Blismas 2001) in a collaborative, typically long-term relationship with practitioners (McKay 2001). Action research thus has a dual goal: contribute to the organisations goals and aspirations and; contributing to common/stock knowledge (Bryman 1989; Fellows and Lui 1997). It is frequently the case that action research follows a cyclical pattern similar to that identified by (Susman 1978) and described by Leiringer (2003) where the dual goals are frequently reflected and acted upon. Not surprisingly action research is therefore frequently associated with longitudinal research that allows for such ongoing reflection and action.

There are undoubtedly benefits arising from this style of research with respect to access, cooperation and information exchange between the interested parties in ways that other research methods cannot achieve. This ongoing process of reflection and action also provides a strong basis for developing a deepening understanding of phenomenon, context and the interdependence between context and phenomenon.

However, action research has been criticised on the basis that it is difficult to avoid the label of 'consultancy' where forthcoming claims of causality and explanations are questionable (Baskerville and Wood-Harper 1996). The generalisability (external validity) of findings from action research are also brought into question (see Leiringer 2003). Blismas (2001) points out that the need for direct intervention and the active participation of researcher and researched in a collaborative venture are prerequisites that organisations in the construction sector are both unfamiliar with and largely unwilling to engage with. Action research is therefore a research method that is not widely used by researchers in the construction management community. There are however a few exceptions in the construction sector such as that reported and enacted by Green et al. (2004) in their study of learning across business sectors.
The longitudinal requirement for action research, the ongoing cyclical process underlying action research and the need for collaboration between researcher and practitioners throughout the research process were considered by the researcher to be insurmountable challenges within the confines of the research proposed. Organisations were also not willing to allow the level of intervention required. Action research was therefore not pursued in this thesis predominantly for practical reasons. From a theoretical perspective the research problem and objectives were not explicitly directed at solving a particular problem facing a particular (or set of) organisations. The diffusion of change was also not an aspect of research that resonated with the concerns of the author.

6.3.2.2.4 Case study
Case study as a research method is widely established by Yin (1994) and supported by Bryman (1989) despite the argument that it represents merely a means for collecting data (see Fellows and Lui 1997). In establishing the point that case study moves beyond data collection and data analysis, Yin (1994) draws on Stoecker (1991) and defines case study as a comprehensive research strategy. Yin’s (1994) contribution to case study as a research strategy is drawn upon by many researchers including, more contemporary construction management researchers, such as Simister (1994), Blismas (2001) and Leiringer (2003). In further defining case studies, Yin (1994) argues that they would be predominantly used where there remained a focus on understanding a phenomenon in its context. In other words, the role of context plays an inflated role in case study research methods:

"...you would use the case study method because you deliberately wanted to cover contextual conditions - believing that they might be highly pertinent to your phenomenon of study" (Yin 1994)

This contextual sensitivity it is argued places case study apart from others such as experiment and surveys. It also resonates significantly with the
problems and objectives contained within the research problem detailed earlier.

Yin (1994) also compares case study research methods to other dominant forms of research method with reference to form of research questions, control and historical perspective on events and lays this out in tabular form – see Table 5.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of research question</th>
<th>Requires control over behavioural events?</th>
<th>Focuses on contemporary events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 5: Research methods comparison (adapted from Yin 1994)

Drawing on the guides and constraints noted earlier, the research content is directed towards asking 'how' and 'why' questions where there is little control over behavioural events and a focus on contemporary events. These are explanatory questions and are particularly supported by the adoption of case study research methods (Bresnen 1988). The guides and constraints directing the evaluation of research methods indicate that case study is the best fit and thus adopted for the purposes of addressing the research problems and objectives detailed earlier.

It is however important to note that there are a number of methodological concerns regarding the case study research method. Notably these are argued by to relate to: how well a 'case' represents an opportunity to observe the phenomenon or issue in question and; bias – subjectivity introduced to the investigation by the researcher and the informants (Hamel 1993). Criticisms of objectivity and rigour have also been levelled
at case study research and have left case study open to claims of methodological weakness (Yin 1993).

Having determined case study for the purposes of the research it is necessary to outline the rational behind the design of the case study. In this respect the research draws heavily upon Yin's (1994) approach to designing case studies as a way to bring the required level of rigour to the process of investigation. The research design along with a need to ground the study in theory is considered to be largely instrumental in addressing the weakness and concerns noted above (Yin 1994, Eisenhardt 1989).

6.3.3 Case study research design

One of the principal concerns of designing case studies is to make clear for the researcher (to reflect upon) and, any reader of this thesis (to understand the choices made), the logical connections between research problem, data, capta (see Checkland and Howell 1998) and analysis. In this sense, the problem of collecting, collating and analysing data that does not address the research problem can be avoided. Whichever research method or strategy adopted a research design is necessary to ensure the rigour required of good quality research. Yin (1994) is instrumental in addressing this issue for case study methods. The case study researcher is directed towards reflecting on five key components of research design that need to be addressed by the budding and even seasoned case study researcher:

1. a study's question(s),
2. propositions, if any,
3. unit of analysis,
4. logic linking the data to the propositions, and
5. criteria for interpreting the findings

Each of these key components is addressed as a way to bring the necessary rigour to the process of research adopted. In turn, this process
of reflection on these five key components allows the researcher to
develop a guiding theory. This guiding theory in essence captures the
rationale and detail of the key components and is more likely to take the
form of a blueprint for conducting the study rather than a grand theory
(Yin 1994). Together the research design and guiding theory inform data
collection (what data to collect) and the selection of methods for analysis.
Other important aspects of case study design need attention and clarity
and are also included in the following section detailing the content of the
research design (sampling, case selection, replication logic and whether
to select a single- or multiple-case design) These other important aspects
explicitly interrelate with the key components and guiding theory in
bringing the rigour necessary. The section on research design ends with
a discussion on the four aspects of the quality of research design –
construct validity, internal validity, external validity and reliability.

6.3.3.1 The study's question
The central question being asked in this study has already been
addressed as a way to inform the choice of case study as the preferred
research method. The study's question is explanatory in nature. As part
of the research design however it is useful to reiterate this question since
it forms the basis of the propositions in the research design.

Q1: How do practitioners within construction organisations make
sense of supply chain management?

6.3.3.2 Study propositions
The propositions direct and shape the collection and analysis of data in
case study research. They are, in this study, dominantly developed from
an interpretation of supply chain management and contextual theories.
They direct and shape attention towards what requires to be investigated
during, and within, the scope of the study. The propositions take the form
of:

"...theoretical statement (s) that provide an explanation of the
phenomena of interest." (Leiringer 2003)
The propositions flow from the review of contextual approaches (chapter 2) and supply chain management theory, issues and themes (chapter 3-5) as the basis upon which practitioners rooted in organisations ascribe meaning and make sense of this content of change. How such meaning and content manifests itself in organisations (processes, practices and actions) is argued to be heavily reliant upon how practitioners make sense of this content in context. It is not presumed that such content is universally interpreted and enacted. Indeed it is not presumed that the content of supply chain management makes any sense to practitioners in the construction sector.

6.3.3.2.1 Proposition 1: Practitioners interpretation of context

Proposition 1 is therefore grounded in an understanding of contextual sensitivity outlined in chapter 2 and thus draws on Pettigrew (1997, 2001a).

![Diagram](image)

**Figure 22: Broad theoretical framework informing the propositions**

In this sense, practitioners within organisations operating and competing in the construction sector are undeniably treated as knowledgeable and
reflexive with respect to both content and context simultaneously. This proposition is broadly informed by the framework in Figure 22 and discussed in the summary of chapter 2. This understanding of the dominant and influential aspects of context drawn upon by practitioners informs the basis of proposition 2 that sets out to explain how practitioners make sense of supply chain management.

**Proposition 1:** Practitioners interpret and draw upon specific aspects of context that shape and are shaped by how they make sense of the content of change. Practitioners within organisations in the construction sector will interpret and draw upon specific aspects of context in bringing meaning to, and making sense of, supply chain management.

6.3.3.2.2 **Proposition 2:** The sense of supply chain management in construction

This proposition draws upon much of the findings reported in chapter 3 and 4. Thus, it is underpinned by a necessity to understand what meaning, and how, practitioners attribute to managerial concepts. It draws in aspects of New's (1997) concern regarding views of supply chain management that are either normative or descriptive ("the is and the ought"). To what extent practitioners prescribe or describe models, attributes or constructs of supply chain management within the context of how their organisations adopt(ed), adapt(ed) and/or implement(ed) this concept is of interest. How these descriptions or prescriptions are, or may be, legitimised is also of concern.

The proposition is also informed by how practitioners define supply chain management. As noted in chapter 3, there is much confusion regarding definitions and as such it is useful to explore and explain how supply chain management is defined by practitioners within construction organisations. For example, do they draw upon, emphasise and legitimise particular functions or concepts in bringing meaning to supply chain management. On the other hand, is supply chain management understood to be just another fad or fashion (Cox 1996, Cox and
Lamming 1997). As noted in chapter 3, past experiences (especially with change initiatives) are also likely to heavily inform how practitioners make sense of and ascribe meaning to current concepts such as supply chain management. Thus, it is important in engaging with practitioners to draw out explanations for how the meaning and form of supply chain management is interpreted and legitimised in context – or indeed how it may fail to resonate with practitioners’ interpretations of concerns and issues within organisations competing in the construction sector and challenge the legitimacy of current practice.

It is also important in explaining the meaning and form of supply chain management to engage with how practitioners in the construction sector understand why and how the concept of supply chain management is being driven. How supply chain management is being driven and by whom will help determine how meanings are ascribed and sense made of supply chain management. Indeed is supply chain management something that practitioners interpret to be of any concern to the problems or context within which their organisations operate and compete.

Therefore, how practitioners define supply chain management and describe how it resonates with their contextually bound concerns are captured and addressed within this proposition. It is also not presumed that supply chain management makes sense to those practitioners rooted in construction organisations despite its frequently ascribed label of ‘best practice’. How supply chain management is ascribed meaning by knowledgeable and reflexive practitioners rooted in construction organisations may differ considerably from the literature.

This proposition also draws on the dominant theoretical perspectives and key theoretical issues outlined in chapter 4. It is therefore broadly concerned with whether practitioners rooted in construction organisations make sense of supply chain management as a concept that addresses strategic or more operational concerns (Tan et al. 1999) – see Figure 16.
The proposition is also directed towards understanding how and why practitioners rooted within construction organisations make sense of some of the strands of debate flowing from the perspectives on supply chain management and key aspects. For example, is supply chain management made sense of as a purchasing or a logistics issue?

The proposition is also informed by an interest in whether practitioners make sense of supply chain management as a concept that has an internal and external focus. This follows Stevens (1989) model of progressive levels of integration in developing supply chain management. It is also supported by Cousins (1995) and Handfield (1999) who indicate that it is necessary for organisations to address the internal supply chain before extending the approach beyond the boundaries of the firm and adopt an external focus. In conceptualising a supply chain that requires to be managed, do practitioners view 'chains' as connections between firms alone and place little emphasis on the interconnectedness between the functions of their own business. Indeed some organisations are one of many that are collected under the umbrella of a single business. How do practitioners make sense of these connections and to what extent do they form a focus for how supply chain management is made sense of by practitioners. The issue of integration between firms is also heavily emphasised in the supply chain management literature and forms an aspect of the analysis to determine whether integration is made sense of by practitioners in construction organisations as a strand of supply chain management practice.

The content of the propositions also seeks to determine how practitioners make sense of what a supply chain is from the organisations position and as Cooper and Ellram (1993) and Davies (1995) note - who own the supply chain? Are supply chains characterised by one strong leader or does a multi-firm approach also work? This also draws in aspects of how practitioners view the extent of a supply chain similar to that outlined by Harland (1996) and Metnzer (2001). For example, it will be illuminating to
explain how practitioners make sense of a supply chain in the context of their organisation competing in the construction sector. Do practitioners relate to and make sense of competing supply chains in this respect or, does the term and description of supply networks (Nohria and Eccles 1992, McHugh et al. 1995, Buono 1997) resonate and make more sense and how.

One of the last and perhaps most important key aspects of supply chain management that the proposition captures are relationships and trust. Much of the content of supply chain management theory is directed towards relationships and trust (see for example Bask and Juga 2001, Handfield and Nichols 1999) – that is the need for and development of better relationships and trust or, the move away from arms-length contractual relationships and low trust exchange relationships. This aspect of supply chain management resonates considerably with previous initiatives in the construction sector such as partnering and continues to underpin numerous others. Practitioners' past experiences of initiatives such as partnering will therefore heavily inform how they make sense of supply chain management in their organisation. How practitioners make sense of this emphasised aspect of supply chain management in context will reveal the extent that supply chain management makes sense to organisations in the construction sector.

**Proposition 2: Practitioners interpretations of context and content contribute to an explanation of how they make sense of supply chain management. This may not necessarily resonate with theory. Indeed supply chain management theory may not make any sense at all to practitioners within organisations operating and competing in the construction sector.**

**6.3.3.3 Unit of analysis**

Units of analysis are understood to be explicitly connected to the research question(s) asked (Yin 1994), and propositions. Clearly defining the unit of analysis is considered to be instrumental in defining and
streamlining the process of what data to collect and the source of such data. The difference between 'case' and the 'unit of analysis' requires considerable reflection since it is considered to be notoriously difficult and rather open to interpretation (Blismas 2001). Indeed, Miles and Huberman (1994) argue for the case as the unit of analysis and, even Yin (1994, 1993) is quoted as saying that:

"as a general guide, the definition of the unit of analysis (and therefore of the case) is related to the way research questions have been defined" (Yin 1994)

and

"once defined the unit of analysis (or 'case') provides stability..." (Yin 1993)

These latter points reinforce the difficulty in defining each. Blismas (2001) draws on Hamel (1993) and Simister (1994), and presents an alternative perspective that distinguishes between levels of specificity with which an object or activity may be viewed. Three levels are identified: cases; units of analysis and; embedded units (see also Yin 1993).

It is perhaps more useful in understanding that the case and the unit of analysis represent the object of the case study. The definition of the case however differs, although not necessarily, from the unit of analysis since the former broadly outlines the object of the study and the latter defines the level at which the object will be studied. These of course may be the same. The object of the study is defined by drawing on the research question. The question is defined at the outset as 'How do practitioners within construction organisations make sense of supply chain management'. My case therefore is defined here as 'organisations within the construction sector attempting to make sense of supply chain management'. This is broadly the object of the study whereas, the 'unit of analysis' will be the 'organisation' since this is the level at which the
object will be studied. Both the case and the unit of analysis here reflect the phenomenon of interest for me in engaging with how construction organisations make sense of supply chain management in the UK construction sector. They are also both instrumental in helping shape the selection of cases for the research from which generalisation will be made.

**Single- or multiple-case designs?**

The question surrounding whether to use a single case design or a multiple-case design is like most methodological and design choices facing a researcher – not entirely clear cut. As with most of these choices the most useful starting point is the research question or problem and the unit of analysis. For example a single case may represent the critical case in testing a well-established, codified and accepted theory, a revelatory purpose or an extreme or unique case:

> "...a specific injury or disorder may be so rare that any single case is worth documenting and analysing." (Yin 1994)

In such circumstances there is either no need to, no opportunity to, or no other way to conduct the inquiry other than by a single case design. The research question in this research and unit of analysis are not suitable for the adoption of a single-case design based on the criteria used by Yin (1994). The multiple case design however, whilst not suited to the exceptions noted for single case designs, do have particular advantages to offer with respect to generalisation (Bryman 1989), robustness and the extent to which the evidence is considered to be more compelling (Yin 1994). The advantages offered by the use of a multiple-case design were considered to far outweigh the burden (see Yin 1994) placed on the researcher in providing the resources required to do a multiple-case study. A multiple-case design was therefore adopted. This however does not mean that each case would not be subject to analysis as a stand-alone entity. Following Blismas (2001), each case is individually analysed and then cross case comparison and generalisation applied (Eisenhardt...
1989). The design of this multiple case approach is detailed in the Figure 23:

Figure 23: Multiple case study design (Yin 1994)

6.3.3.4 Replication logic

The underlying logic of multiple-case studies is similar to that of, but not the same, as multiple experiments (Yin 1994). Experiments/case studies are undertaken separately and replication argued to be established if the results from each experiment or case favourably compare. The basis of such a comparison in case studies is based on the development and use of an explicit theoretical framework. The research therefore draws on Yin's (1994) analytic generalisation approach where the previously developed theoretical propositions are used as a template with which to compare the results of each case study. Similar results from individual cases are argued to reflect some form of replication. Each case must be carefully selected on the basis that they will allow for replication.

Such careful selection is what is generally referred to as case sampling and may take the form of randomised or theoretical. Notably, this informed sampling differs from the sampling logic adopted by surveys such that cases do not have to be representative of the population as a whole. In surveys a 'sample' refers to a group that is representative of the
population as a whole. The logic behind using a ‘sample’ is to generalise from the sample to the population. However, in case study research, a case is representative if it concurs with a pre-determined set of criteria (predominantly developed from theory) that defines the case as an exemplar for observing the phenomenon of interest to the study (Eisenhardt 1989).

Two of the most dominant sampling methods are random sampling and theoretical sampling. Random sampling is however considered inappropriate (Eisenhardt 1989, cited in Blismas 2001) due to the potential to introduce bias from few cases and, to reduce the potential richness flowing from case study research. Theoretical sampling as advocated by Yin (1994), Eisenhardt (1989) and Hamel et al. (1993) is widely preferred as the approach for selecting appropriate cases for case study design that supports replication. Cases in this sense are either chosen on the basis that they support a literal or theoretical replication. A case may be selected so that it ‘predicts similar results’ and reflects a literal replication or; selected so that it produces ‘contrasting results for predicted reasons’ and reflects a theoretical replication (Yin 1994).

For the research in this thesis, literal replication is sought and will be argued to have occurred if the findings from individual cases support the studies propositions. One aspect of the careful selection of cases is therefore informed by the basis of replication.

6.3.3.5 Case selection
Case selection is crucial during case study research. The selection of appropriate cases flows from an understanding of the ‘case’, ‘unit of analysis’ and the phenomenon of interest to the study. It is therefore necessary to reflect upon these aspects of the research design in informing the need for a pre-determined set of criteria (predominantly developed from theory) that defines the case as an exemplar for observing the phenomenon of interest to the study (Eisenhardt 1989). There is however one other aspect of case selection that requires a more
pragmatic stance similar to that outlined by Bresnen (1988). This stance is based on the argument that the main criteria for gaining access to desirable cases will ultimately be 'ease of access' and 'agreement' to participate by organisations. Such a stance hints at the difficulties faced by researchers in gaining access to organisations or indeed finding enough exemplar cases that fulfil overly strenuous criteria. It is not an argument however against pre-defined criteria but does introduce some of the practical difficulties faced by researchers in the field. The following criteria were used as the basis for selecting cases:

1. A case had to be an organisation that currently competes and operates within the construction sector. This directly reflects the boundary for the 'case' and the 'unit of analysis'. It does not however discount organisations that compete in one or more sectors such as manufacturing. There are a number of organisations in the sector that do compete and operate in the manufacturing and construction sectors and as a 'case', such organisations would be considered.

2. A case had to demonstrate a real commitment, interest or engagement with the contemporary change agenda's call for organisations to implement supply chain management within the operations of their organisation. This is largely informed by the definition of the case and an understanding of the phenomenon of interest. The case had to be a construction organisation that was engaged in supply chain management. This does not necessarily mean that they had implemented a system for supply chain management but that they were attempting to make sense of this concept.

3. The research was keen to engage with organisations in the construction sector but these organisations had to represent different functions within the construction sector or operated at different levels. This would allow a wider understanding of how different organisations within the sector engaged with and made sense of supply chain management. Cases
therefore differed with respect to their function and level within the construction sector – for example main contractor or subcontractor, mechanical and Electrical Engineering Company or Roofing & Cladding. Organisations that competed within national and/or regional markets were also sought to determine if explanations were replicated across cases with these disparate characteristics. This allows the testing of supply chain management across a range of organisations in the construction sector and whether explanations for how it makes sense were present despite these organisational differences.

4. Ultimately, cases had to be willing to participate in the study.

The research benefited greatly from what Bresnen (1988) has described as the main criteria for gaining access to desirable cases – ease of access and agreement. Drawing upon existing contacts in the construction sector, the author uncovered a number of organisations that were already concerned with and interested in adopting and implementing the concept of supply chain management. They were also concerned with the wider change agenda that supported its adoption in the sector. These organisations comprised a main contractor and a number of key subcontractors. The main contractor involved also had a connection via their parent organisation, with the ‘building down barriers’ research project. Those organisations chosen as suitable cases for the research therefore satisfied all of the criteria outlined above but most importantly of all were willing to participate and relatively easy to access. The need for ‘snowball sampling’ (Oppenheim, 1992) was therefore unnecessary. Given the nature of the propositions it was also not felt necessary to explicitly adopt and apply any form of rigorous screening tool such as that proposed by Yin (1993).
<table>
<thead>
<tr>
<th>Market</th>
<th>Level of involvement in SCM</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>International Construction organisation with offices across the regions of the UK, Europe and North America. Competes in the international national markets through regional offices.</td>
<td>Extremely concerned with SCM and attempts made to implement over the last 3 years. Strategic relationships sought with clients and suppliers. Better relationships also sought across divisions and offices. Involved in collaborative research to further develop supply chain management in their organisations.</td>
</tr>
<tr>
<td>2</td>
<td>National roofing and cladding contractor with branches throughout the country. Branches act and respond to regional market demands yet are controlled centrally by head office.</td>
<td>Concerned with implementing supply chain management across the business and especially across the branches. Board level commitment to look into the implementation and adoption of supply chain management. Organisations responding to concerns from main contractors. Involved in collaborative research to further develop supply chain management in their organisations.</td>
</tr>
<tr>
<td>3</td>
<td>National environmental control specialists. Contractors with manufacturing capability and branches throughout the country.</td>
<td>Responding to pressure from main contractors to demonstrate that they are managing their supply chain. Frequently asked to pre-qualify on this basis. Involved in collaborative research to further develop supply chain management in their organisations.</td>
</tr>
<tr>
<td>4</td>
<td>Specialist roofing and cladding contractor competing nationally on large scale projects. Operations controlled from one central location that also combines a manufacturing capability.</td>
<td>Currently in the process of developing lean manufacturing within their production facility. Responding to clients and main contractors demands to demonstrate that they are managing their supply chain. Frequently asked to pre-qualify on this basis. Involved in collaborative research to further develop supply chain management in their organisations.</td>
</tr>
<tr>
<td>5</td>
<td>Highly specialised contractor competing predominantly nationally but also globally to design, manage and construct cleanrooms. Operations controlled from one central location that also combines a manufacturing capability located in the United States. Part of a larger group of organisations that includes one of the largest main contractors in the UK.</td>
<td>Responding to pressure from main contractors to demonstrate that they are managing their supply chain. Also interested in developing supply chain relationships with complementary competencies to deliver services to main contractors. Involved in collaborative research to further develop supply chain management in their organisations.</td>
</tr>
</tbody>
</table>

Table 6: Basis for case selection
Guidance on the optimum number of cases for multiple-case studies varies. There are those that suggest 4-6 (Eisenhardt 1989); it is based on when theoretical saturation has been reached (Simister 1994, 1995); it can be pre-planned (Eisenhardt 1989); or it may be anything up to 15 (Miles and Huberman 1994). Yin (1994) alternatively offers a suggestion that it is based on the level of confidence or significance required. Five cases were chosen for the research in this thesis as the basis upon which confidence can be achieved (saturation). Five cases also stays within the limits suggested by Eisenhardt (1989) and avoids the dangers of using too many cases as outlined by Miles and Huberman (1994). The basis for the cases chosen for the research are outlined in Table 6.

6.3.3.6 The analytic strategy
The analytic strategy broadly explains how the evidence is to be analysed. Whilst this might seem an obvious step in the process of designing the research Yin (1994) explains that compared to other well informed research approaches, case study analysis has few fixed recipes to guide the case study researcher. What is suggested by Yin (1994) is two general analytic strategies that help the researcher treat and interpret the evidence and complete the analytic phase of the research. Two strategies are suggested: relying on theoretical propositions and developing a case description. The latter is preferred where theoretical propositions are absent. Propositions have been developed in this thesis and thus relying on theoretical propositions will be the preferred analytic strategy adopted. Relying on the theoretical propositions as the basis of the analytic strategy is considered the most common strategy for case study research since much of the design itself is informed by and based upon the theoretical propositions. The research itself is also of a deductive nature where theory is being tested and thus reliance on the theoretical propositions as the basis of analysis instrumental to the research. The theoretical propositions therefore help focus attention on certain data and to ignore other data. This ultimately informs the coding of data explained in 6.3.3.8.
More specifically the specific analytic technique used as part of the general strategy is reliant upon a case study analysis technique called pattern matching logic (Yin 1994). Pattern matching is one of the most common strategies for case study analysis and forms one of four dominant modes of analysis outlined by Yin (1994) for case study research. Essentially the logic of pattern matching involves the comparison of an empirical based pattern to one that is predicted. If the patterns match, the internal validity of the study is strengthened and conclusions can be drawn about the phenomenon of interest. This also allows for analytic generalisation whereby generalisations can be made from the data to the theory and not as in statistical sampling from a sample to a population. The generalisation of the findings is dependent on how well they match the theoretical propositions/template developed as part of the case study and inherent in general analytic strategy and dominant mode of analysis – pattern matching.

### 6.3.3.7 Data collection

There is little limitation on the types of data that can be collected and used to support case study research. Neither is such data considered to be exclusively of a quantitative or qualitative nature. Indeed, case study research frequently combines such data. Due to the nature of the propositions developed for this thesis, the unit of analysis and, the underlying theory used to support the propositions, the need to engage with how practitioners make sense of supply chain management is an over arching criteria in the selection of an appropriate data collection method. Data collection therefore relied on two main sources of evidence: documentation and interviews. This use of more than one source of data contributes to validity and data triangulation within case study designs and represents one of Yin’s (1994) main guiding principles of data collection and one of the most important sources of information for case study research.

The documentation sourced consisted of information relating to the organisations aspirations and action relating to supply chain
management. A number of documents were received that took the form of: marketing material outlining an organisation's intent to develop supply chain management; annual reports; organisational charts — officially documented or a rough outline handwritten on a piece of paper and; numerous other pamphlets and brochures depicting the competencies and geographical spread of the business or details of what 'kind' of business they were. This data provided broad contextual information but also an indication of the organisation's aspirations for and experience of supply chain management.

This information formed an understanding of the organisation's background and documented movement towards adopting supply chain management. This also informed an understanding of the context of the organisation and was used to consolidate the building of explanations for how practitioners in these organisations made sense of supply chain management. Notably, there was a widespread absence of documentation or material that clearly outlined the organisation's interpretation of supply chain management and the changes required of the organisation to move towards models of supply chain management. Neither was there any documentation that supported aspirations for training and the development of supply chain management within the organisations concerned. There was however a number of marketing materials that used the rhetoric of supply chain management to highlight the organisation's orientation to the change agenda. This absence of detailed material on the implementation and adoption of supply chain management within the organisations concerned is notable in consolidating the explanations derived from the data.

Interviews can generally take one of three dominant forms: structured; semi-structured and; unstructured. These forms differ in respect to the constraints that each places on the informants and the researcher. A structured interview follows a rigid pattern of questions that mitigate against any further probing to the responses to those questions by the researcher. Unstructured interviews on the other hand rely upon Semi-
structured interviews allowed data to be collected that presented an opportunity to reveal how and why practitioners make sense of supply chain management. The interviews took approximately 1 hour and took place in a location and time convenient for the informant. The semi-structured interviews also allowed the use of pre-assigned codes relating to the content of the research propositions to be addressed across all interviewees within the data analysis. This took the form of an aide memoir (Bresnen 1988) or a list of topics to be covered during the interview. Semi-structured interviews allowed flexibility for interviewer and interviewee to explore other interesting avenues arising during conversation that deserve further exploration. This type of interview resonates with Merton et al's. (1990) focused interview where the interview is of an open-ended nature yet follows a set of questions that is linked to the use of a case study protocol during the research. The case study protocol is a standard description regarding how the researcher has engaged with the sourcing; collection and documentation of evidence (see protocol used for the case study research in Appendix 1). It allows consistency to be achieved in these respects across the case studies. The protocol used for this research contains the interview aide memoir used to provide some structure to the interviews conducted and provide consistency across interviews. The protocol is highly informed by the research problem, question, objectives and the propositions developed for the case study. The interview structure is therefore similarly informed by these elements of the research design.

Who to interview within the cases was largely based on the propositions and from a discussion with the main strategic contact within each organisation. What was sought from selection was connection with those organisational practitioners that had or would have a direct involvement with the implementation of supply chain management. This was therefore largely determined through discussion, negotiation and availability. In order to avoid an over-reliance on a single source within cases, multiple interviews were conducted with practitioners that were typically senior in status. A total of 27 interviews were conducted across the five cases.
The interviews were recorded to allow the researcher the freedom to concentrate upon and react to the answers given by informants during the interview. Recording the interviews also allows actual and accurate quotations (the raw data) to be captured and provide a guarantee of full data coverage for analysis. Consent to record the interview from the informants was sought prior to recording where the anonymity of the informant and the organisation was guaranteed. All informants gave consent to the interviews being recorded. The interviews were recorded onto mini-disc and subsequently fully transcribed verbatim onto computer files. These files were then loaded onto a qualitative analysis software application for to facilitate analysis.

6.3.3.8 Analysis
Given the considerable amount of qualitative data collected during the research it was necessary to seek ways to manage the data. Drawing on the experience of Blismas and Dainty (2003) in using computer-aided qualitative data analysis software (CAQDAS) the research sought to use QSR NUD*IST Vivo. Their conclusion that such software should be used to facilitate data management rather than act as analytical tools informs how the software was used for this research. The software therefore provided the basis for manipulating the data and in facilitating the process of coding, searching, retrieving and displaying the qualitative data. It therefore acts to simplify what would otherwise be a complex paper-based system.

As noted earlier, interviews were recorded and transcribed onto .rtf files (rich text files) which could then be uploaded to the CAQDAS software. Supporting documentation was however not uploaded to the software but coded manually and also used to sketch the background and context of the organisation. As already noted however there was little documentation available from organisations that actively supported the implementation and adoption of supply chain management theory.
The software predominantly acts to reduce the large volumes of qualitative transcribed textual data and display such data in forms more suited to drawing conclusions. The reduction of data however is argued to be not only explicit during coding but also implicit in decisions surrounding the choice of research framework and the methods for collecting data (Miles and Huberman 1994). Reduction therefore also occurs prior to data collection and forms part on the analysis process. Reduction is inherent in how: the research question was framed; literature was interpreted; research propositions were developed and; specific codes were chosen and developed.

Data reduction through coding formally attempts to organise the textual data in a form whereby final conclusions and findings can be drawn. Which data is coded, how to code this data and what to code it with are considered to be analytic choices made by the researcher. These decisions of course cannot be wholly objective but are largely determined by the stated research design and the case study research propositions. They are also therefore related to the general analytic strategy and dominant mode of analysis outlined in section 6.3.3.6. As such, coding is informed by the theoretical propositions (see 6.3.3.2.1 and 6.3.3.2.2) that are in turn developed from supporting framework and supply chain management theory explored and developed in chapters 2, 3, 4 and 5. The coding was therefore informed by: what aspects of context or structure practitioners drew upon in making sense of supply chain management; what aspects of supply chain management theory were drawn upon by practitioners in making sense of supply chain management in construction organisations; what meaning do practitioners ascribe to supply chain management and; how practitioners made sense of supply chain management in context. Whilst a considerable amount of pre-defined coding regarding existing supply chain management theory could be developed others would naturally emerge, disappear or merge from the data as analysis progressed.
BEST COPY

AVAILABLE

Variable print quality
The CAQDAS software provided the basis for reducing the data using coding whereby a process of ordering and arranging textual data is formalised. The coding therefore facilitates the deconstruction of textual data into pre-defined and emergent categories. These categories or codes described throughout the actual analysis as 'nodes' form the backbone of the analysis. An example of the coding of an interview transcript is detailed below in Figure 24.

![Figure 24: Coded transcript using NVivo](image)

The codes used were both descriptive and interpretive (Miles and Huberman 1994). They were used to capture data supportive of a predefined set of concepts (supply chain management theory) and data supportive of how practitioners placed meaning upon, described and
made sense of supply chain management in context (contextual understanding of supply chain management). The content and numbers of codes therefore develops as analysis progresses. They are as has already been described either pre-defined or will emerge from the data as it is analysed. It is therefore necessary to repeat the coding process a number of times to reflect the dynamic nature of the codes as an understanding of the content of data increases.

Considerable thought and attention throughout this analysis process was given over to maintaining a manageable number of codes that could be retained in the short-term memory of the researcher – approximately 40-50 codes at any one time according to Miles and Huberman (1994). This it is argued facilitates more focused and comprehensive coding since an unmanageable number makes the process of coding data cumbersome and open to missed coding and miscoding. The danger of developing a coding system that extends beyond that which can be easily managed is recognised by Blismas and Dainty (2003) who call for researchers to exhibit restraint and ingenuity when coding using CAQDAS. The data was coded and subsequently refined three times to ensure rigour in the way that the textual data was coded. The third pass of the data did not produce any new codes.

It must be noted however that despite the desire of the researcher to manage the number of codes emerging from the data the first pass produced over 200 separate codes. This list required considerable reflection and refinement to produce a manageable set of codes for the second and third pass. The tendency to assign multiple codes to single pieces of text and overcode the data outlined by Blismas and Dainty (2003) was also instrumental in helping to reduce and refine the number of codes. Upon reflection the differentiation between many of the initial codes was found to be insignificant and thus many codes were combined to form single categories/nodes. This follows Dey’s (1993) need for distinction between nodes to avoid coding overlap and ineffective analysis (Blismas 2001). The coding was reduced to twenty six codes
that ultimately formed the basis of analysis and how this data was displayed.

Data display is considered by Miles and Huberman (1994) to form part of the analysis process in facilitating the drawing out of conclusions and findings from the data. The display in this research took the form of extracted coded text with its attendant relationships to other codes detailed. The CAQDAS software was instrumental in facilitating this type of display (see Figure 25) where coded text (nodes) could be displayed with coloured coding stripes attached in the margin to display which parts of the text related to other codes and the content of those codes.

![Figure 25: Exploring nodes and relationships using NVivo](image)

Documents were similarly manually coded in this respect and used in conjunction with the CAQDAS displays. There were however little documents elicited during data collection since few organisations had
supply chain management related policies and documents. Displaying data allowed the analysis of codes to be informed by relevant variables and robust explanations and conclusions drawn.

6.3.3.9 The quality of the research

Typically, the quality of research designs is tested against claims of validity and reliability (Denzin and Lincoln 2003). Blismas (2001) usefully summarises the frequent criticisms of case study designs concerned with validity and reliability:

- Threat of bias (Stoeker 1991, Yin 1994)
- Sloppiness and lack of rigour (Yin 1994)
- Generalisability beyond cases (Gummesson 1991, Stoeker 1991, Yin 1994)
- Statistical validity
- Unsuitability to test hypothesis (Gummesson 1991)
- Long tedious results (Yin 1994)

Whilst much of these concerns are addressed by the research design through the adoption of replication logic and analytic generalisation it is necessary to explore and adopt the tests for validity and reliability to the research to ensure quality. Yin (1994) and others (Stoeker 1991, Silverman 2001, Miles and Huberman 1994) suggest a number of tactics open to researchers to address validity and reliability to support claims of good quality research. This material has been sourced and used to help support claims of the quality of the research in this thesis. It is necessary to outline the four common tests used as the basis of ensuring quality research (Yin 1994, Bryman 1989) and the extent that tactics (see Yin 1994, Stoeker 1991, Silverman 2001 and Miles and Huberman 1994) were used to deal with these tests:

Internal validity relates to what Miles and Huberman (1994) describe as the *crunch question* relating to *truth value*. It concerns establishing reliable causal relationships rather than spurious ones.
"Do the findings of the study make sense? Are they credible to the people we study and to our readers? Do we have an authentic portrait of what we were looking at?" (Miles and Huberman 1994)

To address internal validity the research design incorporates tactics such as: data triangulation; an analytic strategy based on the theoretical propositions and pattern matching logic and; theoretical sampling.

External Validity relates to the degree to which generalisation can be claimed or in other words can the study findings be used to generalise beyond the case studied.

"...whether the conclusions of a study have any larger import? Are they transferable to other contexts? How far can they be generalised?" (Miles and Huberman 1994)

Case studies however seek to generalise to theory and thus rely on analytic generalisation. The tactic used within the case design is therefore the use replication logic and cross case comparison based on the theoretical propositions and supporting theory.

Construct validity relates to the establishment of measures for the concepts being studied. The tactics suggested and used within the design of the case study in this thesis to strengthen construct validity dominantly refers to the use of multiple sources of evidence (Yin 1994).

Reliability refers to the repeatability of the operations of the study such as data collection.

"...whether the process of the study is consistent, reasonably stable over time and across researchers and methods" (Miles and Huberman 1994)
In simpler terms is it possible for another researcher to follow similar procedures on the same case study and arrive at similar conclusions. This would of course therefore be reliant on the procedures adopted for the study to be documented. This was achieved by using the case study protocol described previously and a case study database that collected all relevant information regarding each case study.

6.4 Chapter summary
This chapter has explored and attempted to position the research ontologically, epistemologically and methodologically. It has also provided where necessary the rationale for choices made regarding these problematic philosophic dimensions. The methodology section itself has also been fully expanded to include a full description of the research design and the rationale for decisions within the design. The chapter forms the basis upon which empirical evidence has been sourced and analysed and underpins the content of chapter 7. A summary and figure detailing the case study methodology is outlined in Figure 26. This also outlines the connections between the various parts of this thesis and the use of a case study research strategy. The case study methodology draws upon the theory explored in chapters 2, 3, 4, and 5 in developing broad theoretical propositions that form the principal focus for the research. These propositions also draw upon an understanding of the research problem, question and objectives developed in chapter 1. As a general analytic strategy the propositions are relied upon to guide and help the researcher treat and interpret the evidence and complete the analytic phase of the research. The strategy of the case study research is to adopt the use of a multi-case study design (see Figure 23) that uses analytic generalisation and thus seeks to generalise from the data to the theory (section 6.3.3.8). Literal replication is used (section 6.3.3.5) to support explanations for how practitioners in construction organisations make sense of supply chain management across the cases. This is similarly used to explain any similarities or disparities between theory and practice. In essence the thesis is concerned with testing the theory of supply chain management (section 6.3.1.1) in the context of
organisations competing in the construction sector. The final aspect of the methodology offers a discussion and interpretation of the findings and draws out the author's reflections upon the conclusions, recommendations and limitations of the research strategy and methodology adopted.
Figure 26: Case study research strategy and methodology
7 CHAPTER 7 – CASE STUDY ANALYSIS AND FINDINGS

7.1 Introduction
This chapter sets out the detail of the five case studies. The chapter reports upon and discusses each case separately and how the findings relate to the propositions outlined in Chapter 6. The second part of this chapter details the cross case analysis and how this relates to the objective of achieving literal replication against the propositions across multiple-cases. Discussion of the findings is used throughout this chapter.

7.2 Case study 1

7.2.1 Background and context
Case study A focused on engaging with one of the largest and most well known main contractors competing within the UK construction sector. The wider organisation within which this main contractor organisation is located is highly complex, spanning many divisions and other types of organisations that are geographically spread across the UK. This wider organisation geographically stretches across both the Atlantic and the English Channel and competes in the international large and complex projects arena. The focus of this case study was on one of these regional organisations, which will be called 'Organisation A', within the South of England.

Organisation A, following the definitions set out by the DTI regarding employees (see DTI 2003b), is a large organisation. The actual number of employees was however difficult to determine over any reasonable time period since it fluctuated considerably depending on the project workload. Interestingly, the main car park at the entrance of Organisation A told its own story of success and the nature of the construction sector; the employees frequently made a jovial reference to the success of Organisation A in winning projects being reflected in the number of empty spaces there were at any point of time within the car park. The car park metaphor for success used by informants gives an immediate hint
regarding the fragile, temporary and discontinuous nature of work(load) in the construction sector and the nature of the marketplace Organisation A competed within. It also hints at an organisation whose size is continuously expanding and contracting.

The organisation is interested in developing and pursuing supply chain management and had been actively engaged in exploring its potential and implementation for three years prior to this research project. Despite this, little progress had been made in the organisation and therefore the organisation was a willing participant in this research project. Most informants interviewed however had been, or were, involved in past and present initiatives within the organisation to develop and implement supply chain management. How they made sense of SCM was invaluable for exploring propositions outlined in Chapter 6.

Interestingly, the dominant perspective of the strategic contacts was that procurement practitioners would be instrumental in supplying perspectives on supply chain management in practice. This in itself is indicative of where in the organisation strategic management perceive the concept of supply chain management to be most relevant. This may of course display a bias however; this bias reflects that of the strategic management's perception of supply chain management and is therefore highly significant. There were 8 informants interviewed during this case study. Brief details of the informants are given below in Table 7.

<table>
<thead>
<tr>
<th>Informant</th>
<th>Department</th>
<th>Role</th>
<th>Length of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Controls</td>
<td>Senior systems engineer</td>
<td>4 years</td>
</tr>
<tr>
<td>2.</td>
<td>Engineering</td>
<td>Associate Director</td>
<td>18 Years</td>
</tr>
<tr>
<td>3.</td>
<td>Engineering</td>
<td>Senior Engineer</td>
<td>4 Years</td>
</tr>
<tr>
<td>4.</td>
<td>Procurement</td>
<td>Head of procurement</td>
<td>10 Years</td>
</tr>
<tr>
<td>5.</td>
<td>Procurement</td>
<td>Supply chain manager</td>
<td>5 Years</td>
</tr>
<tr>
<td>6.</td>
<td>Procurement</td>
<td>Senior purchasing manager</td>
<td>11.5 Years</td>
</tr>
<tr>
<td>7.</td>
<td>Projects</td>
<td>Contracts Manager</td>
<td>12 Years</td>
</tr>
<tr>
<td>8.</td>
<td>Purchasing</td>
<td>Purchasing manager</td>
<td>4 Years</td>
</tr>
</tbody>
</table>

Table 7: Case study 1 Informant's details
7.2.2 Proposition 1

7.2.2.1 Continuity of workload/repeat work
Continuity of workload is consistently drawn upon and underpins much of how these informants made sense of supply chain management. The informants clearly demonstrate an understanding of workload continuity and repeat work and their relevance as contextual influences on supply chain management. Within the organisation this plays out differently in the market in which they are winning work and that from which they procure services and products. Indeed, the role of continuity of workload between procuring a product and a service is also widely recognised. For example, a significant percentage of workload won by the organisation is on the basis of repeat work with clients. However, not all of the organisations project workload is secured through a continuous flow of demand from these repeat clients. Thus workload as a whole going through the organisation was discontinuous and characterised by fluctuation. The organisation therefore did not guarantee continuity of workload for its suppliers. This significantly alters the way that concepts such as supply chain management, which rely heavily upon 'relationships' play out at the interface between the organisation and its clients or suppliers. The organisations ability to secure repeat work with some clients does not simply make conditions with supplier back-to-back.

7.2.2.2 The legitimacy of the project over project(s)
Informants in the main related supply chain management to projects. They predominantly draw upon 'a project' as the unit of analysis from which they relate and make sense of the implementation, application and most importantly testing of supply chain management:

"...people are naturally cautious and when a new approach comes along what they like to do is oh well we'll just try that out on this one project and see how that goes and if it goes well then perhaps we'll try it on one or two others..."
"...I think supply chain management is being introduced perhaps partially on a project-by-project basis; some projects tend to go totally down the traditional sort of routes, others try to pull in bits of supply chain management then obviously you become a lot more aware of the benefits..."

Inter-connectivity regarding profit maximisation or transaction costs between yesterdays, today's and tomorrow's projects is absent. Projects, project managers and project profit are isolated from concerns or opportunities to improve efficiency across a number of projects. In this sense the legitimacy of pursuing and committing to short-term goals is legitimised within the organisation. The legitimacy of projects is therefore interpreted and drawn upon as a powerful aspect of context that informs how these informants made sense of supply chain management.

7.2.2.3 Cost or relationship driven system
This legitimacy of project thinking is further reinforced by the actions of project managers on projects. This is mostly related to costs. Firstly, projects are driven by the need to make profit. That is profit within the confines of the projects itself not across the business or within a long-term perspective that transcends numerous projects. Indeed, the demands of projects in this respect were considered to be instrumental in marginalizing attempts by the procurement department to engage project managers in the supply chain management initiative. Notably, project managers are measured on the profitability of the projects they manage. In the absence of an alternative performance measurement system it is unlikely that project managers will seek to act differently. Project costs remain central to their thinking and heavily influence their decision-making. Secondly, the role of project managers involves complex trade-offs:

"You have this budget all broken down into elements: design; fee elements if you like and a capital cost element and then he will go out for competitive bids because all of a sudden he will find this
capital cost element, the £4M or £5M, is trying to drive down costs there because he's got over-spend here and under-spend there, he's got an account to get it all balanced out so that will drive the project manager to ignoring supply chain because he will be looking at his absolute cost that is beating his budget every time because he has overspent in certain other areas of the project and that's why it becomes cost driven. “

It makes sense for project managers to act opportunistically to protect profit on a project despite the consequences on long-term relationships with suppliers. It therefore makes sense for project managers to act to protect the profitability of their projects. Their legitimised patterns of behaviour and action are likely to be influential in legitimising what informants interpret as buyers’ instincts to get the lowest costs. Whilst, an understanding that supply chain management is procurement based may act to challenge the way buyers make sense of their actions, it neglects the power of project managers to legitimise project based thinking and a focus on project costs as the main basis for making decisions.

7.2.2.4 The past
Informant’s experiences with prior management initiatives are brought to bear upon how they make sense of supply chain management. Indeed they frequently refer to the content of prior initiatives in locating and making connections with what is interpreted to be the content of supply chain management. The most dominant initiative drawn upon was partnering and, as shall be shown in proposition 2, was highly influential in how informants ascribe meaning to supply chain management. Indeed, most informants struggle to find much conceptual space to distance supply chain management from partnering.

7.2.3 Proposition 2

7.2.3.1 Prescription or description
Informants' discussions of supply chain management tended to prescribe practices and action the organisation should be taking in order to
implement supply chain management. Informants would frequently talk about the fact that things have got to change; it has got to be moved forward; we need to get these people on board; we need to build up our tiers of preferred suppliers; we are still very close to taking little steps out of a normal trading relationship or; they feel that supply chain management is the way forward. The actions and practices referred to in their prescriptions (from procurement practitioners and others alike) largely reflect an operational focus that centred on the activities of the procurement department. The final decision to select subcontractors and suppliers however remained outwith the remit or role played by the procurement department.

Here lies a tension within the organisation and any attempts to develop and implement the operational view of supply chain management interpreted by informants. Supply chain management is perceived to be dominantly related to the development of long-term strategic relationships with suppliers and the rationalisation of the supply base by the procurement department however, decision making on selection was dominantly project (short-term) based and lay with project managers or in some cases the client. The power to institutionalise change and the power to institutionalise supply chain management (albeit operational and procurement based) does not lie within the procurement department but with other influential decision makers within the organisation. This tendency to prescribe supply chain management actions and practices is therefore understandable; without the power to influence or institutionalise change, descriptions of supply chain management in organisation A remain unlikely.

7.2.3.2 Structural influences
The structure of the organisation regarding multiple-interfaces with suppliers was considered to be a significant problem in developing and maintaining long-term strategic relationships with suppliers. Whilst one interface may be operating on the basis of a long-term partnership arrangements with key suppliers this may clash with the endemic and
legitimised behaviour, aspirations and objectives at other interfaces with the suppliers. For example, given that buyers', QS's and project managers' are predominantly measured on cost and by project ("you're only as good as your last job is a common phrase within the industry") developing and maintaining long-term strategic relationships with suppliers is marginalised by the operating structure of the organisation. There was also little to suggest that the organisation was restructuring to resolve such tensions and challenge the legitimacy of short-term project objectives and goals over a long-term perspective. Indeed, interpretations reflected a view that project practitioners operating in this traditional manner draw on considerable power in legitimising their actions.

7.2.3.3 Definition of supply chain management

Drawing on the discussions with informants, it is difficult to determine whether the definition of supply chain management differs greatly from that of project partnering. In the main supply chain management is discussed as a way for improving relationships with suppliers. All informants drew upon project partnering and alliances in how they defined supply chain management. Therefore, their implicit definition of supply chain management does not include scope for including suppliers' suppliers and customers' customers. They also tended not to use the term supply chain management and more often talked about how to manage supply chains.

7.2.3.4 Fads and fashions

Informants are clearly aware of managerial fads and fashions entering the sector and their organisation as initiatives:

"I have a concern that people will see this as just another initiative..."

"...there's a lot of jargon about in the industry isn't there and yes they [practitioners in the organisation] pick it up from the rhetoric..."
Informants interpret that other organisations within the sector have used supply chain management from a marketing perspective for winning work but have changed little in the operations of their business. Interestingly within their own organisation there was a concern that the organisation would also end up going down that line by being unable or unwilling to actually move beyond making all the right noises to implementing associated and necessary change. This concern was borne from the perceived dominance of the legitimised short-term project thinking and behaviour in the organisation to be challenged. It was also informed by informants experiences with partnering – or the inability of partnering to have challenged the legitimacy of project based thinking.

The view of supply chain management as another passing fad or fashion was therefore evident in informants' interpretations. The absence of theory or indeed any form of training or education relating to supply chain management does little to challenge the legitimacy of how the organisation currently operates and competes in the marketplace.

7.2.3.5 Trust, dyadic relationships and collaborative working
Informants interpret trust and forms of relationships as two fundamentally interlinked aspects of supply chain management. Furthermore, levels of trust and relationships between the organisation and its clients or suppliers are discussed and viewed separately. Indeed, levels of trust and relationships between the organisation and its commodity or service suppliers are also discussed and viewed separately. This also reflects a dyadic perspective on integration and directs attention to the relationships between two organisations and not beyond.

The success of better forms of relationships with suppliers are tested with reference to how they improved project performance and not tested by identifying trends towards better long-term performance (across projects). There was also a significant amount of reservation regarding the ability to sustain relationships during conflict on a project. In essence, partnering
and alternative forms of relationships with suppliers that detracted from traditional arms-length contractual relationships were not in place. The organisation had only just begun the process of rationalising their supplier database that currently numbered 25,000. Active partnering with suppliers was not in place and thus the legitimacy of project objectives over the underlying objectives of either project or strategic partnering unchallenged.

However, this is not to say that partnering, an understanding of inter-dependency, trust, long-term objectives and strategies did not pervade within Organisation A. On the contrary, it is clear that informants understand that such concepts offer much to improve operational efficiency. Indeed, a significant percentage of projects won by the organisation were not traditionally attained, but rather attained via partnership agreements or negotiated. Informants clearly identified the benefits from repeat business with clients, serial contracting and, framework style agreements with large clients. These relationships are not tested on the basis of a single project but rather on a more long-term strategic basis. Short-term objectives rooted in a single project are clearly considered to be secondary to securing repeat work from these clients and thus implied an understanding of dependency. It made sense to partner with repeat clients but not the suppliers.

Recognition of dependency between organisations is arguably a consequence of such continuity. However, not all of the project workload is secured through a continuous flow of demand from repeat clients or framework agreements. Workload as a whole going through Organisation A is discontinuous. Any argument that continuity of workload between a client and the organisation leads to continuity of workload between the organisation and its suppliers is therefore flawed. The context within which the organisation engages with its suppliers is considerably different from that of its clients. Whilst the commercial department adopt different relational approaches based on the varying demands placed on them by their clients this does not translate across the business or across the
boundary between the organisation and its suppliers. For the suppliers there is little difference between projects that may or may not be repeat clients since conditions are not back-to-back. In this context, informants legitimise the optimisation of project objectives regarding relationships with suppliers in the absence of dependency or continuity of workload. The organisational strategy within the organisation legitimises collaboration at the interface with repeat dependent clients but not (in the main) suppliers. Indeed, with service suppliers the organisation strategy legitimises the use of arms-length contractual relationships.

Interestingly, informants also refer to difficulties in working with other organisations within the group of companies they belong to – internal suppliers. Collaborative working relationships, continuity of workload, dependency and integration remain as much an aspiration with internal suppliers as they are with the external suppliers. There was little difference perceived by the informants regarding internal or external suppliers. The inability to integrate, engage in collaborative working, and develop trust and dependency with internal suppliers largely makes nonsense of attempts to do so with external suppliers.

7.2.3.6 Competing supply chains
Interpretations revealed little or no insight into competing supply chains. There was one reference to the desire to have a supply chain in place to facilitate the needs of a particular large repeat client but otherwise competing supply chains do not form any part of informants' interpretation of supply chain management. Notably, most informants have difficulty in conceiving of strategic partnering with first tier suppliers let alone an entire chain competing for work.

7.2.3.7 Operational project focus
An operational perspective that is project focused dominates supply chain management. Strategic perspectives of supply chain management are absent. Despite the well-understood argument for improved relationships to realise specific benefits, the legitimacy of acting to optimise a project over the aspirations of optimising over a number of projects is clearly
evident. It does not appear to make sense, for project orientated managers, to risk the sub-optimisation of one project on the basis of predicted future optimisation over a number of projects with a particular supplier. Strategic relationships therefore largely make little sense to project orientated managers in their context. It also does not appear that the legitimacy of project-orientated decisions is challenged by the existence of initiatives such as supply chain management. The power underlying such legitimacy is clearly strong and resilient to such challenges.

7.2.3.8 Awareness and understanding
Whilst there is widespread awareness of the concept of supply chain management there is without doubt little understanding of what constitutes current supply chain management theory. Notably, there are no training courses available or offered. Interpretations of supply chain management in practice therefore do not broadly reflect mainstream management theory nor does it appear that they are based on an understanding or engagement with such theory. Supply chain management is understood to resonate with the concept of partnering. This understanding is clearly supported with reference to partnering arrangements, repeat work and continuity of workload at the interface between the clients and main contractor. The lack of continuity of workload, no supporting context for the emergence of dependency, the clearly legitimised competitive strategy based around the optimisation of a project over projects informs the basis of why long-term relationships between main contractor and suppliers make little sense. The issue of integration is also largely absent.

7.2.3.9 Implementing supply chain management
The implementation of supply chain management, or the operational perspective interpreted by informants largely reflects the activities of the procurement department and the development of new improved tools to aid supplier selection. Notably, the head of the procurement department is considerably reticent regarding the impact of such tools:
"...we need to get out of the situation at the moment where we are trying to develop tools and to me it doesn't really get into action."

Locating supply chain management within the procurement department fails to address or challenge the current legitimising forces that largely determine and make sense of the characteristics of supplier relationships.

Notwithstanding the powerful position of project managers and the legitimacy of their actions, relationships with suppliers may also be compromised at the insistence of the client. Many clients, even those partnered clients providing repeat work are influential and powerful legitimising forces in determining the strategy of procurement between main contractor and supplier. Potential agreements between main contractor and suppliers based on any measure of continuity or dependency can be swept aside by such legitimising forces.

7.2.4 Summary
A number of dominant aspects of context are drawn upon by informants to bring meaning to and make sense of supply chain management. These aspects of context are highly influential in explaining how the content of supply chain management does or does not resonate with the concerns of informants and help to explain how they make sense of this content.

Overall, in making sense of supply chain management, informants do not draw upon supply chain management theory per se. Interpretation of supply chain management remain largely atheoretical. Notably, training and educational courses are largely absent. Informants make sense of supply chain management from an operational perspective. It is assumed to be synonymous with any initiative designed to gain efficiencies through improved relationships with suppliers.

The concept of competing supply chain is absent in the way informants make sense of supply chain management. Similarly, system thinking remains outwith the sensemaking of informants regarding supply chain
management. Informants invariably make sense of supply chain management by connecting it to the concept of partnering. In particular, partnering with suppliers is viewed to be integral if not synonymous with supply chain management. Partnering is however, neither novel nor lacking in practice within the organisation. Indeed large portions of workload is procured through partnering arrangements with clients although these are on the decline. Informants make sense of these partnering arrangements through an understanding that 'continuity of workload' makes relationships highly interdependent and provide a platform for trust and collaborative working to emerge.

Similarly, the dominance and legitimacy of traditional contracting, managerial autonomy, project profits, incentives and the structure of the market are drawn upon in making sense of arms-length contractual relationships with suppliers. Informants clearly demonstrate considerable doubt and reservations regarding the content of supply chain management to challenge such dominance and legitimacy. Supply chain management or partnering with service suppliers despite highly interdependent relationships with some clients does not make sense to informants. Indeed, it makes sense to talk about the existence of continuity of workload rather than supply chain management since the latter makes little sense without the former. Notably, informants also demonstrated an understanding that relationships with commodity suppliers differed from service suppliers. The context within which commodities are procured differs considerably. As such relationships with commodity suppliers are long-term, based on a strategy of single or dual sourcing and transcend project centric decision making processes.

The findings of the case study replicate the theoretical propositions guiding the research. Notably, relationships with disparate external organisations are formed by how knowledgeable and reflexive informants interpret context and practice. Interpretations of the aspects of context identified shape differently the relationships with repeat clients, non-
repeat clients, commodity suppliers and service suppliers. These aspects of context therefore follow a particular logic in how they are used.

Notably, there is little to suggest that informants actively engage with and draw upon supply chain management theory in how the interpret its content since it rarely moves beyond the content of partnering and improving relationships. In the main, informants interpret supply chain management to make little sense in the context they are rooted.

7.3 Case study 2

7.3.1 Background and context
The organisation is a specialist subcontractor. Their business is rooted in providing roofing and waterproofing design, products and services in the construction sector. The organisation is a national contractor with branches in most regions throughout the UK. Much of the activity with major clients and suppliers is centrally controlled through the head office although branch managers preserve some autonomy in making decisions regarding selection. As a national contractor the organisation is a large organisation by DTI standards (DTI 2003b) although regional branches are in themselves small or medium sized organisations that respond to regional markets. Although Organisation B largely provides a service to the marketplace they are dominantly procurers of commodities such as roofing felts and pitch. They directly employ the labour and skills required to provide design and construction as a service to clients. There are also clearly two distinct markets within which Organisation B competes; the first reflects new build projects with main contractors whilst the second reflects refurbishment contracts with clients, client agents or facility management companies. The latter is characterised by repeat work and maintenance contracts whereas the former is characterised by workload discontinuity and traditional competitive tendering. Supply chain management has been a concern of the organisation in recent years and is largely driven by demands placed upon the organisation from clients in both the markets within which it competes. There were 4 informants
interviewed during this case study. Brief details of the informants are given below in Table 8.

<table>
<thead>
<tr>
<th>Informant</th>
<th>Department</th>
<th>Role</th>
<th>Length of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Branch Manager</td>
<td>26 Years</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Branch Manager</td>
<td>14 Years</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Branch Manager</td>
<td>22 years</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Head Office</td>
<td>Commercial Buyer</td>
<td>11 Years</td>
</tr>
</tbody>
</table>

Table 8: Case study 2 informant’s details

7.3.2 Proposition 1
There are a number of aspects of context drawn upon by informants that are used by informants to inform how they place meaning on and make sense of supply chain management.

7.3.2.1 Continuity of workload/repeat work
Informants clearly demonstrate an understanding of workload continuity and repeat work and their relevance as contextual influences on issues such as supply chain management. However, this plays out differently in the market in which they are procuring services and products and that within which they compete for business. Continuity of workload is linked with the purchasing power realised by a centralised purchasing department that predominantly procures commodities. Informants draw upon an understanding of the existence and nature of workload continuity in legitimising particular behaviour and action.

7.3.2.2 The legitimacy project objectives over project(s)
Informants’ actions are understood to be informed by whether the optimisation of a single project is legitimised rather than certainty of supply and delivery across projects over time. The objective of procurement was to achieve certainty across projects regarding costs, time, quality and delivery. Orders were not placed with suppliers on a project-by-project basis. Agreements were used with suppliers that transcend projects. Such agreements were used with the commodity
suppliers. Notably, the organisation did not have an ongoing commitment to procure services from the marketplace — these were employed directly within each regional branch.

Similarly, contracts with clients in the refurbishment and maintenance market are based on many projects and thus optimisation across projects the main objective of such agreements. This however was not the case with clients (main contractors) in the new build market where contracts were let and tendered for on a project-by-project basis. There existed little or no continuity of workload in this market. The absence of continuity or repeat work with main contractors is instrumental in how informants made sense of relationships with main contractors in this market.

7.3.2.3 Cost or relationship driven system
Whilst costs are an important aspect of how informants base many of their important decisions this was not done on the basis of a single project. Indeed lower costs, it was conceded, may be available in the market at any particular time but are be traded off for more important issues such as certainty, trust and a sustainable ability to compete in the market. The relationships with commodity suppliers were considered to be more important across projects than a lower price offered by other suppliers for a single project. The relationships were also instrumental in facilitating the meeting of demands of main contractors in competitive tendering situations and an ability to share resources for research and development. Dual and single sourcing arrangements were typical. Relationships with suppliers are interpreted to be heavily reliant and emergent from these long-term arrangements that transcend projects.

7.3.2.4 Geography
A unique aspect of context that largely determines who the organisation selects as a single or dual source supplier is related to whether these suppliers have a national presence. The need for a national set-up mirrors that of the organisation and their desire to compete for work nationally. Selection is therefore based on a need to mobilise resources, including those of its suppliers, anywhere within the UK. There is
therefore a barrier to entry to suppliers looking to contract with the organisation – a need to have a national set-up.

7.3.3 Proposition 2

7.3.3.1 Prescription or description
Informants within the head office made sense of supply chain management as an aspiration of the organisation to improve efficiency and the delivery of clients’ project requirements in the new build market. They are prone to prescribe how this may be achieved. This largely reflected an aspiration to partner with clients and main contractors. At this interface inefficiencies are perceived:

“I see it as working together to get what the clients and the subcontractor [Organisation B] being able to do something and make a profit and be able to be comfortable to go and do another project of a similar type and know that they’ve got the confidence to be able to work and trust people. So it is about trust, communication and commitment from people.”

Supply chain management is understood to make sense as a way for organisations to work together across projects that individually and collectively benefit client and contractor. This is however challenged by the informants own interpretations of the legitimacy of entering into and sustaining long-term relationships with main contractors in the new build market. Informants therefore understand the utopian acontextual argument for entering into collaborative arrangements with clients and suppliers. They also demonstrate in their sensemaking why this argument falls apart in particular contexts – where continuity of workload is absent and the market is characterised by the legitimacy of opportunistic behaviour and arms-length contractual relationships.

7.3.3.2 Structural influences
Important structural changes are interpreted by informants as largely instrumental in developing interdependent relationships with their
suppliers. The organisation had recently centralised their procurement function. This was largely to do maximise purchasing power and achieve a number of objectives:

"We reorganised the business to make it a central function and to cut down our suppliers from maybe fifty to one or two various suppliers, 1. To give us better buying power and 2. To be able to work along with these major players as well and to be able to get commitment from them and to be able to help resolve problems and to develop new systems..."

"...when we put all the businesses together, the 19 branches together, and each branch having a take of £X you've got a take of 19x£X all of a sudden. It becomes financially lucrative for a supplier to start dealing with us and I think that concept, we targeted all our main suppliers of different materials and we've now got a situation where we only deal through one or two suppliers...and we've got good cooperation and communication with these people"

This structural change in the procurement of suppliers made sense as a way to improve operational effectiveness and efficiency. Purchasing power is viewed not only to improve direct costs but also as a way to control the suppliers' behaviour and action. Characteristics such as commitment, communication and problem solving are viewed as commercially imperative to the future workload, stability and competitive advantage of these organisations:

7.3.3.3 Definition of supply chain management
Supply chain management is viewed as an extension to partnering. As the structural change in the procurement of suppliers suggests, strategic partnering is undoubtedly something the organisation has developed in recent years that is bringing benefit. Supply chain management is understood to be an extension of this strategic partnering to their
customers not already partnering within the refurbishment market and clients and main contractors within the new build market:

"...we have our own supply chain management in term of partnership agreements with various suppliers to us but the next stage on with main contractors very little has been discussed so supply chain management was sort of teetering around the edges more than anything else."

Supply chain management is therefore viewed as being synonymous with partnering and concerned with improving operational efficiency. It is the interface with main contractors that the need for partnering and the development of supply chain management is understood to be directed.

7.3.3.4 Fads and fashions
Supply chain management as a fad or fashion is evident within the interpretations of informants:

"...it's another buzzword you know..."

"...they go in phases and it sort of died for a number of years until we went back into customer service so there's a somewhat jaundiced view of these things..."

The emphasis on customer services as being similar to supply chain management reflects and reinforces this focus on partnering with customers such as main contractors. Supply chain management is understood to be an extension of partnering. In doing so, supply chain management is not given any substantive content beyond partnering.

7.3.3.5 Trust, dyadic relationships and collaborative working
Legitimised trust with the suppliers is interpreted by all informants to be clearly evident and ongoing. Informants make reference to the structural changes made to procurement policy as a way to legitimise the basis of
this trust. The new centralised procurement function had gained significant power to negotiate terms and conditions with suppliers. The use of single sourcing partnering arrangements and dual sourcing is rooted in negotiated schedule of rates. There is therefore an incentive to procure from these suppliers and an incentive on behalf of the suppliers to facilitate such orders on time and to a particular quality standard. These relationships were however largely discussed as dyadic although there did appear to be evidence of dependent relationships between suppliers themselves. Whilst the restructuring is chronologically used in the interpretations of informants as the start of improved relations and trust, it is the evolution of that relationship and trust over time within this context that is understood by informants to be the basis of current trust between the two parties.

Whilst branch managers may procure from other suppliers that occasionally undercut the prices offered by partnered suppliers, this does not occur. The legitimacy and content of the partnering relationship with suppliers survives such a challenge. There are a number of explanations regarding why it makes little sense to use such suppliers. Firstly, partnered suppliers are understood to be motivated to resolve problems that inevitably emerge in the course of contracting. Informants understand that ongoing sourcing arrangement with suppliers locked these suppliers into taking seriously the responsibility for resolving future problems relating to materials, systems or services. Secondly, their respective businesses are understood to be mutually dependent and it makes commercial sense for these organisations to collaborate to win business in the marketplace. From a trust perspective and following (Korczynski 2000) this interpretation is based on an understanding of incentive/governance structure where interdependency exists. Thirdly, these evolving relationships are related to the emergence of successfully co-developed innovations. This reinforces the interpretation of trust with suppliers and also the emergent recognition of dependency between these organisations. Lastly, the legitimacy of the relationship with suppliers' takes precedence over lower costs available in the market and
is reinforced by company policy. Company policy marginalized and penalised branch managers for opting out of using the agreements with suppliers.

Supplier partnering arrangements are therefore heavily legitimised and institutionalised. This was not the case however for client or main contractor partnering. Without an avenue to consolidate power over clients and main contractors, the organisation is understood to be unable to legitimise collaborative relationships or partnering with main contractors or clients. Informants are able to make sense of this dominant approach via a number of factors. Firstly, schedules of rates and prices for work that could be offered by the organisation would be at best an aggregate of price fluctuations over the year. Main contractors understand this fluctuation and are reluctant to enter into arrangements where their competitiveness in the market during periods of high and low demand would be affected by a static schedule of rates. The legitimacy of project thinking is clearly interpreted to be evident in the actions and behaviour of main contractors.

This however is not the case with repeat clients in the refurbishment market or where clients bypass main contractors (although this is not common). In these circumstances continuity of work and certainty of prices (schedules of rates) appear to make more sense to such clients seeking certainty. A preference to work for clients over main contractors is reflected in the recent drive within the organisation to target and market their approach to clients with an ongoing portfolio of workload. Informants also understand however that many clients cannot generally cope with controlling and coordinating (partnering) numerous specialist contractors and thus elect to use main contractors. Collaborative working and trust with main contractors therefore remains an aspiration that is largely related to the ability of main contractors to provide continuity of workload. It is widely understood that main contractors largely win business through the traditional route of tendering. This it is argued locks them into a tendering approach with its suppliers. Informants' understand that without
continuity of workload from clients, main contractors are locked into traditional contracting approaches with its service suppliers. Informants therefore appear to understand that collaborative working and partnering with main contractors are unlikely to be legitimised without continuity of workload to militate against the legitimacy of project thinking.

7.3.3.6 Competing supply chains
Informants tacitly understand the concept of competing supply partnerships. Aspects such as sole sourcing, dual sourcing and workload continuity in the new procurement strategy are drawn upon by Informants in interpreting evolving interdependent relationships with suppliers in the marketplace. Work secured is interpreted to be heavily reliant on the efficiencies and competitive advantage gained from this new procurement strategy. It is also recognised that efficiency gains improve the level of workload secured in the market for both the organisation and its suppliers. In working together to achieve efficiencies they are also working together to improve workload continuity and a more powerful position in the marketplace. The extension of this way of working beyond the suppliers was however absent. The notion of an entire chain competing is therefore absent although an understanding of the dynamics of competing and dependency in a market present.

7.3.3.7 Operational business and project focus
The dominant interpretation of supply chain management within reflects an operational perspective. The interpretation however reflects not just a procurement perspective but also logistics. These perspectives are linked by the need to use not only sole or dual source suppliers but also for these suppliers to mirror the national presence of the organisation. Geographical closeness is therefore an important concern in selecting suppliers.

Projects are not used as the basis of the relationships with suppliers. Relationships are interpreted to be heavily reliant and emergent from long term agreements and arrangements that transcend projects. High levels of dependency are understood to be emergent from such arrangements
that shape and are shaped by action. In other words, collaborative working is interpreted to be emergent from such arrangements that also act to reinforce the legitimacy of such an approach. However, projects remain the basis upon which the dominant approach with main contractors is based. This it is understood by informants' acts to legitimise opportunistic behaviour and arms-length contractual relationships with main contractors.

7.3.3.8 Awareness and Understanding

There is little awareness or understanding of current supply chain management theory. Notably, there are no training courses available or offered. Supply chain management in practice therefore does not broadly reflect or draw upon mainstream supply chain management theory per se. It does however draw upon an understanding of inter-firm relationships. Action taken to improve and maintain relationships characterised by high levels of trust and interdependency are understood to reflect supply chain management. In this sense, and wholly apparent within the language used by informants, interpretations of supply chain management resonate considerably with the concept of partnering.

Informants clearly understand why partnering with suppliers makes sense and the context which reinforces and reflects a partnering approach. The tacit recognition by informants that the context within which supplier partnerships are rooted differs from that of main contractor is instrumental in demonstrating how informants reflect upon and make sense of partnering and/or supply chain management in context.

Integration is evident with some key suppliers. Co-development of innovation is indicative of the organisation and its suppliers engaging in mutual activities characterised by committing resources and risk taking. The ongoing sharing of knowledge with suppliers regarding the source of potential workload is also indicative of a highly integrated interdependent relationship. Following (Stevens et al. 1989) model of progressive integration it is clearly evident that internal integration across branches is
unnecessary although integration between central and branch firmly established through power and legitimacy. The legitimacy of project objectives does not dominate. The consistent interpretation that sustainability of improved relationships requires continuity of workload and repeat business emphasises the role of context. Power to legitimise collaborative relationships with main contractors however lies outwith the domain of the organisation – it lies at the interface with main contractors.

7.3.3.9 Implementing supply chain management
The operational view of supply chain management has been implemented to a degree with the rationalisation and use of sole and dual source suppliers. It is notable that the implementation process to rationalise and set up sole and dual source arrangements for supply is powerfully legitimised and institutionalised from the centre. In other words, head office is the source of legitimising power within the organisation to change and institutionalise change across the company.

The legitimisation and institutionalisation of partnering with suppliers by is therefore firmly supported by power within the organisation and understood to make sense given the contours of the market. There was little to suggest that similar sensemaking applies to the relationships and arrangements with clients and main contractors in the new build market. The repair and maintenance market was however dominated by an understanding that partnering does make sense and thus the drive to target repeat clients. Notably, there are no partnering arrangements with main contractors and little drive or incentive to target and market these customers. Indeed, partnering with main contractors was interpreted to particularly problematic due to the legitimacy of aspects of context.

7.3.4 Summary
Informants clearly demonstrated that specific aspects of context play a crucial role in how they made sense of supply chain management. They simultaneously relate supply chain management to how they develop and improve upon the relationships they have with their external clients and suppliers. Partnering is therefore drawn upon by all informants within to
describe the form and type of relationships they associate with supply chain management. Notably, the organisation already has partnering relationships with suppliers and describes the legitimacy of these relationships through a drive to improve efficiency and also in relation to aspects of context such as a focus on relationships over costs and workload continuity. The benefits of these relationships directly relate to the benefits usually associated with supply chain management. However, the legitimacy of such relationships with main contractors is similarly interpreted by relating to aspects of context. The lack of workload continuity, the legitimacy of projects over projects by main contractors and lowest costs tendering on projects acts to make nonsense of partnering with main contractors. Similarly, supply chain management is also therefore understood to be nonsense at the interface with main contractors.

Interpretation of supply chain management is atheoretical and training or educational courses absent. Informants made sense of supply chain management from an operational perspective. Supply chain management is assumed to be synonymous with any initiative designed to gain efficiencies - it is procurement and logistics based. This is not surprising given the dominance of procuring commodities. The view that they have supply chain management in place with their commodity suppliers is therefore understandable although, the wider perspective of the interconnectedness of many organisations competing as a supply chain is absent. Competing supply chains do not make sense to informants. Integration with commodity suppliers is still evolving although is absent at other interfaces such as with the main contractors.

Knowledgeable and reflexive informants draw upon continuity of workload, the legitimacy of short- or long-term thinking and the legitimacy of costs over relationships in making sense of supply chain management. These aspects of context follow a particular logic in how they are used to make sense of supply chain management. Notably, there is little to suggest that informants actively engage with and draw upon supply chain
management theory. In the main, informants interpret supply chain management to make little sense in the context main contractor relationships are rooted. This context differs considerably from the context within which partnering relationships with commodity suppliers exists.

7.4 Case study 3

7.4.1 Background and context
The organisation is a specialist subcontractor competing within the construction sector. They predominantly work for main or 'mechanical and electrical' engineering contractors. By DTI (2003b) standards the organisation is medium sized. What makes the organisation especially interesting from a supply chain management perspective is its two-fold nature. It is also a manufacturer. Their service includes the design, production, sales, delivery and installation of particular components used in the construction sector. Whilst they provide a design, delivery and installation service on complex large projects they also supply smaller more simple components to merchants for the less complex small projects market. Their experience as a manufacturer exposes them to manufacturing or production theories, practices and initiatives. The opportunity to learn from other sectors is nowhere more available than within the confines of this type of organisation. They are however not unique in this sense, many specialist sub contractors in the construction sector have manufacturing capabilities and production facilities. Indeed three of the case study organisations fall into this category. The design and production facilities are situated on the south coast of the UK at their head office while regional offices deliver the service capability to install larger more complex components. Design, construction, installation and maintenance are the main functional interfaces between the organisation and its large customers. The organisation procures both commodities and services from the marketplace. Their involvement in supply chain management was largely driven from a perspective that the clients and main contractors asked if they had a supply chain in place during tender situations. They were being driven to look into and implement supply
chain management from these clients and main contractors. There were 4 informants interviewed during this case study. Brief details of the informants are given below in Table 9

<table>
<thead>
<tr>
<th>Informant</th>
<th>Department</th>
<th>Role</th>
<th>Length of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Commercial</td>
<td>Contracts Manager</td>
<td>8 Years</td>
</tr>
<tr>
<td>2.</td>
<td>Manufacturing</td>
<td>Manufacturing manager</td>
<td>1 Year</td>
</tr>
<tr>
<td>3.</td>
<td>Purchasing</td>
<td>Purchasing team leader</td>
<td>5 Years</td>
</tr>
<tr>
<td>4.</td>
<td>UK Sales</td>
<td>Sales Director</td>
<td>30 Years</td>
</tr>
</tbody>
</table>

Table 9 Case study 3 informants' details

7.4.2 Proposition 1

7.4.2.1 Continuity of workload/repeat work
Informants draw on continuity of workload in how they made sense of supply chain management. Predominantly, their understanding of how external relationships relate to workload continuity is instrumental in understanding how they made sense of aspects of supply chain management.

7.4.2.2 The legitimacy project objectives over project(s)
Action and influential decision are understood to be related to the whether legitimacy is given to project-centric thinking or long-term thinking that transcends projects. For example, the actions of project managers in seeking to optimise a project may be legitimised by a structure that places the power to make important procurement based decisions in project managers. How informants interpret this aspect of context is instrumental in how they made sense of aspects of supply chain management.

7.4.2.3 Cost or relationship driven system
The legitimacy of pursuing objectives by focusing on either lower costs relationships informed how informants made sense of supply chain management. The production aspect of the business largely procures commodities and products whereas the construction aspect of the
business largely procures services. Whilst costs remain an important aspect in the procurement of each of these supplies, the legitimacy of securing good long-term relationships dominates in the procurement of commodities and less so for services.

7.4.2.4 Market structure
The current operating structure within the organisation gives significant autonomy to its project managers to source and procure supplies and services. Notably however, the market from which supplies and services are sourced is understood to be that is characterised by an ability to always procure at a lower cost. The service market is one in which costs associated with switching between suppliers is minimal. It is also indicative of transactions where the development of dependency is rooted in the length of a project. Open market negotiation is normal practice in securing the services of suppliers in the construction aspect of the business. This is understood to be a function of the market structure.

7.4.3 Proposition 2

7.4.3.1 Prescription or Description
Interpretations of supply chain management largely reflected a prescription of what needed to be done to achieve implementation. Informants clearly saw the benefits in developing better relationships with customers and suppliers and some of the mechanism towards its achievement. They understood the argument that collaborative working can achieve efficiencies. However, in connecting this argument to their reality, informants challenged this simplistic argument. Indeed, it is clearly apparent that supply chain management did not resonate with the organisational structure within which informants operate.

7.4.3.2 Structural influences
A decentralised structure for procuring goods and services made the consolidation of purchasing power within the organisation very difficult and thus any aspirations of partnering. Measuring the performance of project managers against margin improvement on projects legitimised project profit maximisation and marginalized initiatives focused on
achieving commitment, learning and trust in the long-term. Descriptions of current organisational behaviour and practice are therefore made sense of with reference legitimising structures within the organisation.

"...the structure [construction part of business] is not right to implement supply chain management..."

Notably, the manufacturing facility does not operate in a similar way or within a similar operating and legitimising structure. Integrated teams, partnering with suppliers, long-term thinking and a logistics/procurement perspective of supply chain management were described by informants within the production part of the business. Clearly there were and are different pressures for change, structures and contextual factors within this part of the business where such characteristics make good commercial sense in a way that they don't within the construction part of the business. The separation of construction and by the board regarding change tacitly concedes that change in one does not necessarily make sense in the other.

7.4.3.3 Definition
Supply chain management is dominantly related to initiatives to improve the relationships they have with suppliers and customers. Supply chain management is therefore connected with: the desire to rationalise the supply base; consolidating the purchasing power of the organisation through centralising procurement and; committing to the use of limited suppliers for the bulk of workload – supplying greater degrees of understanding regarding workload continuity, certainty and capacity planning. Note these are rooted in prescriptions supplied by interviewed informants and do not reflect a definition of supply chain management in practice.

7.4.3.4 Drivers of change
Within the manufacturing part of the organisation the success of a highly rationalised supply base, integration and collaborative relationships with suppliers is described and related to both a procurement and logistics
perspective on supply chain management. The drive for change in the manufacturing part of the business is therefore related to issues such as inventory control, funding for stockholding and reducing transaction costs with both suppliers and customers. Notably, such issues do not enter the prescriptions of supply chain management in the construction part of the business. Relevant issues and pressures to change in these disparate parts of the organisation are therefore clearly interpreted to differ significantly.

Clients and their desire to partner with the organisation have driven change with respect to initiatives such as partnering. However, despite much of the content of this change they are understood to have largely failed to deliver. Indeed, they have acted to reinforce the legitimacy of opportunistic behaviour. Informants prescribe changes in the structure of the organisation, the structure of the sector and organisational strategy as necessary to achieve the change required by initiatives such as supply chain management. In other words implementing supply chain management is understood to be achieved by redefining structures and not by simplistic attempts to 'copy and paste' managerial practice.

Within the manufacturing side of the business it is understood that change in production philosophy, structure and practice was largely driven by a recession in the manufacturing sector as a whole in the early 1980's. This change is also understood to have been slow and evolutionary. Such pressures for change are understood to be unlikely to emerge in the construction sector due to its fragmented structure.

7.4.3.5  Fads and fashions
The dominant interpretation that supply chain management differs little from prior initiatives related to improving relationships with suppliers (such as partnering) is rather problematic for attempts to legitimise change. For example, the articulation of past experiences with partnering in the interpretations of informants indicates that such experiences inform
their interpretations of the relevance and resonance of supply chain management:

"Two or three years ago we had a lot of documents from main contractors talking about preferred suppliers, talking about relationships and partnering, where they asked us to fill in these great books and do these packs – we will come along and see you. None of them went anywhere. We went along with it but it never developed into anything with any one of them so whether it was a buzzword at the time I don't know"

This formed forms part of the history of innovation diffusion drawn upon by informants in how they made sense of supply chain management. Informants learnt from such experiences, it is reflected upon and used in the future. In this case learning associated with partnering informs interpretations of the relevance of supply chain management. Note, partnering is reflected upon in the quote above as possibly a buzzword.

7.4.3.6 Trust, dyadic relationships and collaborative working

To demonstrate the recognition of the relationship between trust, reorganisation and managerial practice it is considered necessary and fully justifiable to provide the following full exert from one of the transcripts:

"...[the organisation] has been very, very weak on their supply chain management. They set up these subcontractors to do the insulation, they then introduce something called the subcontractors charter, which was set up five years ago where they identified certain key insulation subcontractors who they wanted to become partners with and part of this charter was that they would set themselves up with an office, with a full time admin, they would go around in vans with [the organisation's name] written on, the guys would walk around with [the organisation's name] logos. They would in effect be with [the organisation]. It started to fall down in
so much that to join this club you had to give a certain percentage of your previous five or three years turnover back to [the organisation]. So it started to go down, some of them said *** it, we're not going to do it. Then there was this fact that if you were going to do any work for with [the organisations] you've got to be part of this club. So it wasn't so much a partnership - it was really blackmail to try and get some recovery back from these guys.

**What was the purpose of the membership fee?**

If I was cynical I would say to boost the turnover in one particular year for the company. It's a way of recovering some additional profit. The fees involved were tremendous. Some were into the £100,000+ figures to be part of this club. The danger was that they took away the central buying and gave it back to the project managers, gave the project managers this responsibility to improve their margins so suddenly the project managers can see this freedom to go out and get competitive tenders which is something they do all the time. They have a frame of mind that they have to go out and get competitive tenders and suddenly these five or six companies found themselves being bid against each other...... Someone then decided that the subcontractors charter was dead, however there are a lot of organisations out there who feel that they've been cheated and they'd put something into it and they've had no course of compensation other than two or three years of exclusive rights to our business. That's the opposite to supply chain management, getting someone to buy in to be one of your suppliers.”

Whatever the motivation to set up the subcontractor charter, project managers, given autonomy to make purchasing decisions and subsequently measured against project profit, find little incentive to use such charters. The legitimacy of the charter is linked to the power of a centralised procurement function and the absence of a measurement system linked to projects. Clearly, project managers are legitimately motivated and incentivised by the structure of the organisation to act
differently from that expected of the charter. This structural change had a
direct effect on managerial practice and behaviour.

Whilst the argument that collaborative relationships provide the basis for
efficiency gains, the structure and strategic focus of the organisation is
interpreted to legitimise:

"...looking after the financial aspects of those projects rather than
building relationships with people"

"...the issue on their (Project managers) one job and getting the
best deal (margin maximisation) for with [the organisation], not the
best deal for the collective package [including clients or suppliers] on that deal"

This focus mirrors and is understood to be directly attributable, at least in
part, to the behaviour and actions of main contractors. Their past and
recent experience on partnering with main contractors reinforces the
legitimacy of their current operating structure and behaviour. Indeed,
recent examples of entering into partnering arrangements with main
contractors pre-tender to improve cooperation and communication for
winning the bid from clients has been quickly followed by the need for to
competitively tender for the work. This experience confirms for informants
that little has changed in the sector despite partnering arrangements
being available and used in the sector. There seems little to convince
informants that partnering or supply chain management makes sense
given such recent experiences and their interpretations of context.

7.4.3.7 Operational project focus
Supply chain management is undoubtedly dominated by an operational
perspective that is project focused. It is therefore understood to be related
to improving efficiency through improved relationships. Indeed, those
informants interviewed demonstrated little understanding of the difference
between partnering and supply chain management. They were seen to be
synonymous. Informants clearly understood the benefits to accrue from better relationships with suppliers and customers such as certainty of service, suppliers acting to protect the organisation, less arbitration and better communication. However, they are also clearly aware that the current operating structure legitimises the optimisation of projects over any long-term relationships with suppliers and main contractors and largely reinforces current practices – business as usual.

The legitimised recipe that initiatives have to challenge within the organisation is understood to be one that is characterised by project efficiency. The structure of the organisation is understood to support this model. Addressing the structure to facilitate supply chain management is recognised yet the legitimacy of this structure is also fully understood. The board however are interpreted to be reluctant to restructure to accommodate initiatives such as partnering and supply chain management – to this body such change does not make sense. The project model of operational efficiency therefore dominates and makes sense despite interpretations that good relationships can bring longer-term benefits. Recent experience with partnering on projects with main contractors has also done little to challenge the dominant project efficiency model.

7.4.3.8 Awareness and understanding
Informants interviewed demonstrated an awareness of supply chain management although, this moved little beyond the development of improved relationships with suppliers and customers. Supply chain management is therefore dominantly related to partnering. None of those interviewed had received any training regarding supply chain management or indeed partnering. Supply chain management in practice therefore does not broadly reflect mainstream management theory. There is little within the interpretations of these informants to suggest active engagement with supply chain management theory. Supply chain management is understood to be a concept designed to improve efficiency through better relationships. Collaborative relationships with
suppliers and main contractors are however understood to be nonsensical.

The production aspect of the business does enter into long term agreements (schedules of rates/prices) for commodities. Here the benefits of discounts and reduced transaction costs are interpreted to make sense. They are also easily measurable. The construction aspect of the business does not however procure commodities dominantly. On the contrary, their procurement is dominated by services such as skills and labour related to installation. These are sourced locally depending on geographical areas and cannot be characterised by workload continuity or certainty. Both aspects of the business are controlled by the board that are active in legitimising aspects of supply chain management (the operational perspective) within the manufacturing aspect of the business but not construction. This dual strategy is indicative of a tacit recognition that what makes sense in one sector does not necessarily make sense in another. The organisational board is clearly not struggling to understand the benefits of supply chain management – it just did not make sense to them when related to their activities in the construction sector.

7.4.3.9 Implementing supply chain management
Implementation of supply chain management was directly related to structural change. The content of change was understood to be emergent from structural change. This is a rather unique since most change initiatives rarely embrace structural change as an enabler of change.

7.4.4 Summary
Analysis provided dominant aspects of context that informants draw upon in bringing meaning to and making sense of supply chain management. Interpretations of supply chain management related to how relationships with suppliers and clients could be legitimised such that they transcend projects. Informants therefore make sense of supply chain management from an operational perspective. It is however assumed to be synonymous with any initiative designed to gain efficiencies through improved relationships with suppliers. This also connects it to the concept
of partnering and is frequently referred to by informants. Supply chain management is therefore not differentiated from partnering by the informants.

Partnering is however not new to the organisation. Informants frequently referred to experiences with partnering in highly negative terms. Their experience with partnering is instrumental in how they made sense of the aspirations of supply chain management to improve relationships with main contractors and suppliers. Indeed, it does not appear to make sense at all at the interface with main contractors due to lack of workload continuity, low dependency or a commitment to legitimise relationships over project costs. Similarly, the suppliers' experience of partnering with the organisation have been coloured by a system that acts to give project managers decision-making autonomy and measures them on a project basis. The legitimacy of project costs over relationships therefore also exists at the interface between the organisation and its suppliers. Notions of collaborative working, improved trust and integration do not resonate with informants operating within this legitimised system. Indeed the experience of partnering and the subcontractors' charter clearly demonstrate that these concepts have made little impact upon the legitimacy of how informants act and operate – it is business as usual.

Knowledgeable and reflexive informants draw upon continuity of workload, the legitimacy of short- or long-term thinking, the legitimacy of costs over relationships, market structure and past experience of initiatives in making sense of supply chain management. These aspects of context follow a particular logic in how they are used to make sense of interpretations of supply chain management. Notably, there is little to suggest that informants actively engage with and draw upon supply chain management theory. Indeed, interpretations of supply chain management rarely move beyond the content of partnering and improving relationships. In the main, informants drew upon context in demonstrating that supply chain management made little sense within the context they are rooted.
7.5 Case study 4

7.5.1 Background and context
This organisation is a specialist roofing and cladding contractor in the construction sector and by DTI (2003b) standards is classified as a medium sized organisation. The organisation predominantly works for main contractors and are especially interesting since they provide both a manufacturing and a construction service. Their service includes the design, production, sales, delivery and installation of roofing and cladding panels. Their experience as a manufacturer exposes them to manufacturing production theories, practices and initiatives. Indeed, the organisation is still in the process of moving towards a 'lean' production manufacturing facility with the help of specialist lean thinking consultants. Such thinking has invaded the internal operations and structure of the business both within the manufacturing and construction side. Design, construction, installation and maintenance are the main interfaces with customers. Their interest and involvement in supply chain management is being driven by main contractors and clients in the construction sector and is independent of their current programme of diffusing lean thinking. There were 7 informants interviewed during this case study. Brief details of the informants are given below in Table 10

<table>
<thead>
<tr>
<th>Informant</th>
<th>Department</th>
<th>Role</th>
<th>Length of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Accounts</td>
<td>Accounts manager</td>
<td>16 Years</td>
</tr>
<tr>
<td>2.</td>
<td>Contracts</td>
<td>Department manager</td>
<td>2 years</td>
</tr>
<tr>
<td>3.</td>
<td>Design</td>
<td>Technical manager</td>
<td>10 Years</td>
</tr>
<tr>
<td>4.</td>
<td>Estimating/Sales</td>
<td>Department manager</td>
<td>30 years</td>
</tr>
<tr>
<td>5.</td>
<td>QS</td>
<td>Department manager</td>
<td>10 years</td>
</tr>
<tr>
<td>6.</td>
<td>Strategic Management</td>
<td>Managing Director</td>
<td>17 Years</td>
</tr>
<tr>
<td>7.</td>
<td>Strategic Management</td>
<td>Systems manager</td>
<td>14 years</td>
</tr>
</tbody>
</table>

Table 10: Case study 4 informant’s details
7.5.2 Proposition 1

7.5.2.1 Existence of other initiatives
It is important to note that informants interviewed made reference to a number of initiatives that currently drew upon much of their time regarding change. The most significant of these was Investors in People (IIP) and Lean thinking. Much of the content of supply chain management was related these initiatives. Notably, it is the manufacturing side of the organisation that has been dominantly exposed to change related to these initiatives.

7.5.2.2 Continuity of workload/repeat work
The dominant focus on relationships with respect to supply chain management is underpinned and explained through an understanding of workload continuity. This continuity is used to explain how relationships might be characterised by problem solving capabilities, dependency and a shared destiny. It was also to support an argument surrounding the organisations ability (or inability) to plan for capacity and manage its resources carefully in maintaining good relationships.

7.5.2.3 The legitimacy of project objectives over projects
Action and influential decision are understood to be related to the whether legitimacy is given to project-centric thinking or long-term thinking that transcends projects. How informants interpret this aspect of context within their organisation is instrumental in how they explain the relevance of supply chain management.

7.5.2.4 Market structure
The market structure is tacitly interpreted to be highly influential in determining the scope for relationships:

"...we are almost tied [to the main contractor], that no matter how bad the client can treat us, and he might pay two weeks late, and we've really scrambled to get this money in if we need the turnover for next month you will still work with ####### and that is the case."
Although we're only partner to their point of partnering [the organisation] must do A, B, C but when it comes to actually paying they can pretty much please themselves.

The market structure is such that the organisation has little (although not no) choice regarding whom they work with. The need to feed their organisation with the necessary turnover in a market where the certainty of a guaranteed programme of work is absent legitimises entering into arrangements with clients who have a poor track record for prompt and accurate payment. This aspect of context is drawn upon by informants in how the made sense of what they interpret to be supply chain management.

7.5.2.5 Costs or relationship driven
Informants make sense of supply chain management by drawing upon the legitimacy of either focusing on costs or relationships. This is understood to shape relationships in different ways with respect to clients and suppliers.

7.5.2.6 The past
Informants' experience of partnering with main contractors and clients is predominantly drawn upon in how they made sense supply chain management. Partnering is also used by informants to describe the content of supply chain management.

7.5.3 Proposition 2

7.5.3.1 Prescription or description
The organisation had been very active in recent attempts to change, both in the ‘factory’ and, ‘on-site’. Lean thinking was largely seen to be the concept that had universal application in both environments. Similarly, attempts to change had been incremental with 'lean' invading only the internal operations of the business with aspirations to expand this to include inter-organisational interfaces and site activities at a later date. Thus, the prescriptive content of informants' interpretations of supply
chain management therefore relates to the operational efficiency of inter-
organisational interfaces.

Interpretations of lean thinking therefore fully describe and demonstrate an understanding of the 'internal supply chain'. Notably, the use of management consultancy to help initiate organisational change, within the sample of organisations studied, was unusual. This investment in lean thinking had made a considerable impact on the factory but also gained the organisation a significant amount of attention from main contractors and clients. The legitimacy of lean thinking however had yet to be tested outwith the confines of the organisation.

7.5.3.2 Drivers of change
The recent interest in supply chain management is driven by clients (large and repeat) who use it as criteria to pre-qualify suppliers for projects:

“We were asked to join a team for ##., ## wanted to have a designated team within [the organisation] to do their work. You presented to ## that you could do this, you had all these relationships and one of the things was supply chain management so I just basically looked at what we were doing and determined that we do have a sort of supply chain in position which we have to then pass on to ## and say that this is what we are doing. So I picked up a little bit about it and the principles of it.”

It is also understood that main contractors place pressure on organisations to support their efforts to develop supply chain management:

“I think the combination of [a number of main contractor organisations] – [another main contractor] are talking about supply chain management so we are coming under pressure from four or five different sources to do something to support the initiative, to
streamline our supply chain, so that they [the main contractors] can get some benefit.

Whilst supply chain management is driven by main contractors and clients, recent change within the organisation is not related to this drive. On the contrary change is related to the organisations investment in and efforts to implement lean thinking. Indeed, supply chain management is made sense of in the context of the ongoing implementation of lean thinking:

"I think they are aware of it and understand it and are committed to bringing it in as part of lean thinking."

Recent change is associated with a move towards understanding, analysing and improving their internal supply chain via the implementation of lean thinking. Notably, change is being driven and legitimised by strategic management and not a reaction to demands placed on them from main contractors and clients. However, it is clear that clients and main contractors are attempting to influence their suppliers to 'do' supply chain management. The organisation is being driven to demonstrate that they can mobilise a supply chain if requested to tender. Note, the main contractor is not part of the managed supply chain. These demands take the form of pre-tender qualification processes such as the setting up of framework agreements. In one case the title of framework supplier conferred upon the organisation after such a pre-qualification process has resulted in little or no work to date.

7.5.3.3 Structural influences
There are important structural changes that are both historic and ongoing. All of these changes are related to lean thinking. Notably much of this change is directed towards addressing the barriers between departments working within the organisation. Benefits such as customer satisfaction and improving their reputation to deliver are interpreted to accrue from these structural changes to improve communication. Improved reputation
is understood to be instrumental in achieving greater levels of workload continuity. This concedes that relationship building is not only an exercise in improving operational efficiency but also related to wider issues such as attaining continuity of workload in the market.

7.5.3.4 Trust, dyadic relationships and collaborative working

Good working relationships exist with suppliers. This is considered to be related to the purchasing 'clout' or power. The organisation is one of the largest organisations in the sector for the products and services they provide. They represent a significant account to their supply base. Despite the existence of such good relationships rationalisation of the supply base is understood to be necessary. Such rationalisation is however related to the perceived desire of main contractors to see such rationalisation as part of the organisations move towards being supply chain management compliant. There are various mechanisms currently used to achieve such rationalisation:

- standardising various elements used in projects such as fillers and insulation material;
- attempts to influence designers specifications to incorporate the use of their preferred suppliers rather than being forced to use suppliers they are neither familiar nor comfortable with employing;
- clustering of activities or components that are let to a single supplier rather than numerous.

There are also a number of suppliers that are single source simply because of a lack of competition to supply that commodity. One of the benefits of a rationalised supply base is understood to be reduced transaction costs. The demands placed on the organisation to provide products and services throughout the country places a constraint upon the scope for rationalising the supply base. Not all suppliers have a national presence or can mobilise a supply chain in an area with which they are unfamiliar. The geographical spread of workload is therefore
interpreted to limit the opportunities for national contracting organisations to develop coherent supply chains held together across projects with attendant continuity of workload.

There are a number of term and partnering agreements with specific commodity suppliers. The informants largely agreed that formal agreement with suppliers would add little benefit to their current good relationships with suppliers. Familiarity with their supplier's products and to some extent logistic support means they already understand these relationships to be based on partnering. The selection process/strategies are based on a system of experience. Generally, the organisation selects suppliers they know and have used for years.

"why should I [the organisation] start using your product/service [a new supplier] and kick somebody into touch after 10 years of giving us great service, how would you feel if I did that to you?"

If they are moving into a new arena of supply they will attempt to build a relationship(s) with suppliers in that field. It is also notable that a lot of their procurement is based on repetitive work. They essentially supply continuity of workload to key suppliers and understand that benefits such as problem solving outweigh lower short-term costs.

There is even co-development in innovation with suppliers that suggests recognition of dependency and opportunity. There are a number of key suppliers that have been suppliers for over 20 years where the relationship is interpreted to be characterised by predictability, trust and understanding. These suppliers are considered to be 'good for their problems'. This concedes that problems will inevitably arise on projects but it is what happens during this period of potential conflict that characterises a long-term relationship. Particular key suppliers are also considered to be largely predictable since:
"...suppliers have been with us a lot of years because they know exactly how we work and we know their work and we trust them and they trust us."

From a trust perspective there is considerable confidence drawn from an understanding of their norms of behaviour. It is notable that these types of relationships are only characteristic of a limited number of supply relationships and not across all suppliers used. It is also notable that these suppliers are commodity suppliers with a national presence. They do not represent suppliers of labour sourced locally in the areas where projects are to be constructed. These suppliers are also interpreted to be largely influential in working with the organisation during the tendering stage to help win the work from main contractors and clients. Such collaboration also hints at a level of confidence that each party is dependent on each other to win business in the market that they will not exploit each others vulnerabilities. There is a commercial imperative and understanding that such collaboration is necessary to satisfy the ongoing aspirations (if only to survive) in the marketplace.

The organisations clients are generally the large national main contractors and a limited base of clients that operate largely within the retail sector. A considerable amount of workload is procured under the label of partnering. Partnering with main contractors is characterised by main contractors guaranteeing the work on a project as long as the subcontractor can beat the market price. It is difficult to understand why this model of partnering differs from traditional competitive tendering and is summed up in one interpretation as:

*Just another way of MC'c to beat the suppliers about with a stick to get the best price at tender (note this price probably will change at final account). However, they do, if partnering was adopted with a degree of commitment and understanding, have the ability to focus on the project delivery process and improve that on a continuous basis.*
It is also widely interpreted that there is an illusion of partnering at a strategic level with main contractors that does not reflect or resonate with operational activities and relationships. The illusion of this partnering is understood to be frequently exposed where operational conflict or problems arise during a project. It is also interpreted that this experience of partnering with main contractors has had consequences for building and improving long-term relationship. As such, partnering with main contractors is entered into with considerable scepticism.

Partnering with repeat clients is interpreted by informants to make sense since they are based on continuity of workload. The benefit of such continuity is widely interpreted by informants to be related to their ability to continuously improve the operational efficiency and effectiveness of projects through learning and understanding. Such learning and understanding is not only related to process and technology but also to organisations’ ability to draw confidence from evolving norms of behaviour. These repeat clients and partnering agreements guarantee overheads and profit and thus a level of certainty regarding financial outlay and return not available through traditional contracts or partnering arrangements with main contractors. Partnerships involving repeat clients are characterised by high levels of integration, process improvement, joint improvement and learning. It is characterised by continuity of workload not afforded partnering relationships with main contractors. In this sense, main contractors, despite partnering arrangements rooted in projects, cannot draw out the benefits of learning and understanding from a programme of work that commits organisations into an arrangement that commercially legitimises the need for better long-term relationships.

Another important benefit regarding long-term relationships was related to capacity. Repeat clients guaranteeing a programme of work contribute to an ability to predict and plan the capacity necessary to feed the organisation with sufficient workload. This is also understood to be largely
beneficial for suppliers. However, despite this, planning for capacity is still largely problematic as the quote below implies:

"It's almost impossible for anyone to grab hold of the reins and say hang on, we're committed to [the organisation] to give them x amount to start on the 1st May. If that ends up being the 1st September then so be it. I don't think the main contractor can even live with that. Nice if he could."

7.5.3.5 Operational project focus
The dominant interpretation of supply chain management reflects an operational perspective that is focused on understanding and improving relationships with suppliers and, to a lesser extent, customers. Efforts and activities to develop supply chain management with main contractors' ala improved relationships and trust are largely absent and considered to be synonymous with partnering. The focus of supply chain management is on improving supplier relationships to achieve greater operational efficiencies. The organisation already had a significant number of highly sophisticated inter-dependent relationships with key suppliers that are interpreted to outstrip calls for supply chain management. Their interpretations of supply chain management therefore concentrate on descriptions of how these relationships operate and the benefits they bring.

In this sense, projects are not used as the basis of determining relationships with key suppliers. Relationships are interpreted to be heavily reliant and emergent from long term agreements and arrangements that transcend projects. There exist high-levels of dependency and trust with key suppliers that are understood to be rooted in a structure that shapes and are shaped by their ongoing interaction. In other words, collaborative working is emergent from such arrangements that also acts to reinforce the legitimacy of such an approach. Similar arrangements and agreements are used with a number of key repeat
clients with a need to continually procure from the sector and provide continuity of workload.

Projects remain the basis upon which the dominant approach with main contractors is based. The unit of analysis for partnering remains at the level of individual projects with main contractors. The structure within which work is sourced and the way in which operational activities are legitimised in these project partnering arrangements is interpreted to have little benefit beyond traditional contracting. Notable the structures within which partnering is legitimised differ little from traditional contracting. The phrase 'its business as usual' is therefore not an uncommon one to describe relationships, practices and structures that exist between main contractors and Organisation D.

7.5.3.6 Awareness and Understanding

Whilst there is certainly a widespread awareness of the term supply chain management, there is little direct reference to supply chain management theory. The demands placed on the organisation from main contractors and clients to have compliant supply chain management systems in place dominantly relate to having a strategy in place to mobilise and manage a supply chain. Supply chain management therefore reflects this external demand. Notably, there are no training courses available or offered.

Supply chain management resonates considerably with the purchasing storyline on supply chain management. There is therefore a clear understanding of the benefits of good relationships with suppliers. This understanding is clearly supported with reference to dependency, repeat work, workload continuity, trust and long-term relationships. It is also notable that practices and characteristics of current relationships with suppliers demonstrate a considerable resonance with supply chain management. In a sense, the organisation's current operating structure and practices reflects supply chain management or indeed partnering arrangements but it is not, nor it would seem has it ever been, subject to
scrutiny or influence by these concepts. It is merely the way that relationships with suppliers have naturally evolved over many years.

The tacit recognition that the context and history within which certain supplier relationships are rooted differs from that of relationships with main contractors is instrumental in demonstrating how informants legitimise aspects of supply chain management. The lack of continuity of workload and high levels of dependency clearly legitimises project based and arms-length contractual relationships with main contractors. However, significant continuity of workload and high levels of dependency also clearly legitimises strategic partnering relationships with repeat clients.

The integration storyline in the supply chain management literature is evident in the interpretations of informants although attributable to the ongoing implementation of lean thinking and not supply chain management. It is also interpreted to be reflective of an internal perspective. The ongoing development of multi-functional project teams is clearly an attempt to improve project integration between functions of the business.

7.5.3.7 Implementing supply chain management
Implementation of supply chain management related to both the implementation of lean thinking and the drive from main contractors and clients to benefit from the organisations 'supply chain'. There is however no direct drive or initiative to implement supply chain management despite the calls from main contractors and clients alike. However, progress towards the implementation of lean thinking is reinterpreted by informants as an indication of their move towards supply chain management.

7.5.4 Summary
Informants drew upon numerous aspects of context in making sense of supply chain management. Supply chain management is dominantly related to external relationships with suppliers and clients/main
contractors and made sense of with respect to all of the aspects of context described in proposition 1. Relationships with key suppliers, whilst not documented as partnering, were characterised by continuity of workload, measured across projects, legitimised over projects costs and understood to make sense in the context of the market. Poor relationships with main contractors however were documented in some circumstances as partnering yet characterised by no workload continuity, the legitimacy of project costs over relationships and understood to make little sense in the market. They were however locked into contracting with main contractors despite a preference to work for repeat clients who provide workload continuity. The need to feed the organisation with business to meet capacity levels legitimised this ‘beggars cannot be choosers’ business decision.

Knowledgeable and reflexive informants draw upon continuity of workload, the market structure, the legitimacy of short or long-term thinking, the legitimacy of costs over relationships and experience of past and current initiatives in making sense of supply chain management. These aspects of context follow a particular logic in how they are used to make sense of supply chain management. Notably, there is little to suggest that informants actively engage with and draw upon supply chain management theory. Indeed interpretations of supply chain management rarely move beyond the content of partnering and improving relationships. In the main, informants interpret supply chain management to make little sense in the context they are rooted.

7.6 Case study 5

7.6.1 Background and context
This organisation is a specialist subcontractor that specialises in the design, development, manufacture and installation of cleanroom and controlled environments. They provide a single point of responsibility for delivering a range of modular cleanroom systems to meet the needs of the pharmaceutical, biological, micro-electronic, containment and associated industries where environmental considerations are absolutely
critical. They predominantly work for main contractors although are frequently nominated by clients. Similar to previous case studies, this organisation also has manufacturing capabilities and owns its own production facility in the US. Main contractors desire to get earlier input on design from specialist subcontractors include the design expertise of this organisation. They are located in the North East of England and are capable of competing for work globally although the majority of their workload is secured within the UK. Much of their interest in supply chain management stemmed from an involvement with main contractors and clients keen to explore the organisations capability in supply chain management. There were 4 informants interviewed during this case study. Brief details of the informants are given below in Table 11.

<table>
<thead>
<tr>
<th>Informant</th>
<th>Department</th>
<th>Role</th>
<th>Length of service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>Managing Director</td>
<td>20 Years</td>
</tr>
<tr>
<td>2.</td>
<td>Commercial/Sales</td>
<td>Commercial controller</td>
<td>1 Year</td>
</tr>
<tr>
<td>3.</td>
<td>Design and Business development</td>
<td>Design Director</td>
<td>15 Years</td>
</tr>
<tr>
<td>4.</td>
<td>Estimating/Planning</td>
<td>Manager</td>
<td>16 Years</td>
</tr>
</tbody>
</table>

Table 11: Case study 5 informant's details

7.6.2 Proposition 1

7.6.2.1 Continuity of workload/repeat work
This aspect of context is drawn upon by informants in how they made sense of supply chain management. In particular, informants argue that the market they compete within has shifted away from workload continuity and repeat work towards competitive tendering. They are also able to articulate some of the inherent dangers in providing workload continuity and how this may be treated by suppliers who also still compete traditionally for workload in the marketplace. Notably this experience relates to an internal supplier.
7.6.2.2 Market structure
Markets within which the organisation competes and procures from is used by informants to make sense of supply chain management. Whilst they cannot draw upon statistics relating to the exact structure of the market they are able to articulate their interpretations of what demands are placed upon them by other organisations in the market.

7.6.2.3 The legitimacy of the project over projects
Action and influential decision are understood to be related to the whether legitimacy is given to project-centric thinking or long-term thinking that transcends projects. How informants interpret this aspect of context within their organisation is instrumental in how they explain the relevance of supply chain management.

7.6.2.4 Costs or relationship driven
Informants make sense of supply chain management by drawing upon the legitimacy of either focusing on costs or relationships. This is understood to shape relationships in different ways with respect to clients and suppliers.

7.6.3 Proposition 2
7.6.3.1 Prescription or description
The informants frequently prescribe what the benefits of supply chain management are:

- certainty (no surprises in behaviour of suppliers and clients on projects);
- repeat work and;
- capacity planning.

Supply chain management is prescribed as a move away from competitive tendering towards negotiated contracts between main contractors (clients) and any potential supply chain (including internal suppliers) led by the organisation. Notably however, negotiated contracts with clients and main contractors are on the decrease and relationships
with their internal M&E supplier had broken down entirely to the point where they will not work together despite complimentary competencies in the marketplace. Continuity of workload attained from the marketplace on the decline along with any ability to develop relational contracting.

7.6.3.2 Structural influences
To an extent it is understood that the marketplace does not legitimise supply chain management. Change is argued by the informants to be moving in the opposite direction to much of the content of change associated with supply chain management.

"...with ###### [an organisation within the group] we've worked together, we've had a design team, we've had their team members here (co-located), all that sort of thing, working very closely with them, tremendous benefit. They've gone, some of our long-term clients have gone, repeat business is down to less than 20%, so we're thinking maybe this supply chain management, partnering, collaborative working is not the approach for us at all. We're the doubting Thomas and wondering if the future doesn't lie here, it's in staying in competitive tendering."

The legitimacy of acting to procure the services of an external M&E contractor rather than the internal M&E contractor makes nonsense of the simplistic storyline of being able to develop integrating and collaborating relationships within an internal supply chain. The previous actions of the M&E contractor to act opportunistically are however understood to be legitimised through the structure of the markets they compete within. It is also felt that more control can be exercised over external suppliers. The organisation was structured in such a way that the legitimacy of a project overshadowed an understanding of performance over a number of projects. Dependency on M&E suppliers was fully understood and hence their concern to appoint the right M&E partner.
7.6.3.3 Definitions
Whilst supply chain management is understood to be relatively novel it is also rationalised by informants as reflecting the characteristics that defined the way they did business in the recent past. This is largely related to the fact that most informants perceive the business to have moved away from negotiated repeat work with clients to a market position dominated by competitive tendering. In this sense, collaborative long-term relationships with clients are on the decline. Strategic partnering with clients in the past is therefore interpreted to have been beneficial to the organisation and noted to be a scenario they are keen to return to in the future. There is however little explanation of why this shift towards having to competitively tender for work has arisen in recent years other than demands from main contractors and clients. What is perhaps most surprising about this aspect of informants’ interpretations is its direct contrast with the discourse of partnering and supply chain management that has dominated the improvement agenda over the last ten years in construction. The experienced reality of informants in the organisation is that the industry is moving in the opposite direction from that called for by the Latham and Egan reports. Despite this, informants made sense of supply chain management by defining it as a concept that is operationally orientated to improve the efficiency and competitiveness of the organisation. This is understood to be achieved through improving relationships with clients and suppliers and connected with increased continuity of workload, certainty through established norms of behaviour and, the ability to plan capacity within the organisation.

7.6.3.4 Drivers of change
Supply chain management is interpreted to be driven by the demands of some clients and main contractors although, there is little content to this demand such as information regarding what these customers actually want regarding supply chain management. There is therefore no relevant direction, training and practice relating to supply chain management either within the organisation or from the customers. In other words it is understood that:
"...the marketplace doesn't want it today"

The concurrent shift towards competitive tendering by clients is understood to contradict this drive for supply chain management. The legitimacy required to implement supply chain management in the organisation is therefore understandably absent. The drive for supply chain management is thus interpreted as needing to be directed via action, such as a shift away from competitive tendering by the clients and main contractors. This shift is absent, indeed going in the opposite direction despite the rhetoric of supply chain management emanating from main contractors. The shift towards competitive tendering legitimises a focus on costs:

"...previously if we were simple negotiating and perhaps the margins were a bit more fatter than they are likely to be (in competitive tendering). So as a company we were focused on delivering, getting things done, a very task orientated company. What we wanted was service (from suppliers), everything on time and the price wasn't secondary but it wasn't quite as important as being able to deliver. Now (in a competitive tendering situation) we have got to be able to supply on time and we have got to have the right price and the supply chain have to understand that."

There is a premium placed on the certainty of 'delivery'. It is a premium that clients and main contractors are not willing to pay in a competitive tendering context despite their drive to see organisations develop and comply with supply chain management.

7.6.3.5 Fads and fashions
Underlying interpretations of supply chain management by informants is a considerable degree of familiarity indicating that previously resonated with the concerns of informants. Supply chain management differs little from the context previously worked in where repeat work made up to 60%
of the workload and internal collaborative relationships with group companies were active. Supply chain management is therefore not seen to be entirely novel:

"The circle has gone right round us, for many years we've bought into this, not in these words, we haven't had a badge for it or anything, but we've worked with the same suppliers for many years, not just that one client for 12 years, I could name a lot of clients, 62% repeat business, all this sort of thing."

Past experiences inform interpretations of the relevance and resonance (or lack of) of supply chain management in the marketplace today. It does not make sense in the marketplace today. It is therefore not surprising that some of the informants referred to supply chain management and partnering as buzzwords pervading within the sector at the moment. Their content is understood to make little sense in the marketplace.

7.6.3.6 Trust, dyadic relationships and collaborative working

The organisation has very good working relationships with a number of key suppliers. These suppliers are mainly commodity supplier with agreements in place with a rebate structure depending on quantity ordered over the year. Formal partnering agreements are considered unnecessary since good long-term relationships have survived to date without such formal agreements. Notable by its absence is any system of measuring service suppliers' performance either explicitly or tacitly. The emphasis on bid costs as a precursor to winning projects overshadows the collection and use of performance data during the selection process. Thus, the organisation largely procures on the basis of lowest cost and mirrors the demands placed on them by clients and main contractors:

"What we do is we competitively tender a job and we win it and we've got a supplier who perhaps we haven't worked with before
who has gone in on a very low price and that's why he's got the job"

However there is a mechanism for choosing other than lowest tender during the bid process:

"...if they want to give to anyone but the cheapest they had better come and see me and I will want to know why..."

Selection other than the lowest is a deviation from the norm. As noted earlier there is no basis, at least in terms of past performance data, to make such a challenge to the acceptance of the lowest tender:

"We have nothing to measure by apart from we have occasional wrap up meetings by the project managers."

Problems with accepting the lowest cost are understood however, the institutionalised and legitimised system of selecting lowest cost remains unchallenged. Priority is given to winning the work and will be achieved by tendering the lowest cost to their clients. This also concedes that the marketplace is dominated by clients who are looking for and similarly emphasise lowest cost. The legitimacy of costs over relationships is clearly apparent.

Informants understand the need for a good quality, highly trusted M&E supplier that they can partner with for mutual benefit – winning work being the most important. Indeed, for some contracts, the M&E component of the bid could represent over half the value of the contract. Past relationships with their internal M&E supplier would suggest that high levels of integration and collaboration at this interface have proven unattainable. It is widely accepted that the internal M&E supplier used the continuity of work supplied by the organisation to inflate costs and make above average profits on these projects. This precipitated the breakdown of their relationship with this M&E supplier:
"the internal M&E supplier worked for Organisation E with this client for these 12 years and every time we submitted a price on our job we had the argument with them. We would expect to see your prices coming down, you're getting to know this client better, we should be bringing efficiencies to the table not taking advantage of the situation of the price going up. I'm sure what was happening was the price going up, the costs were coming down, the profit was getting bigger. That's the problem because they had some nasty client screwing them and they were losing a lot of money on the job and they've got to find it elsewhere. That's the reason why we don't use the internal M&E supplier so much these days."

The internal M&E supplier used repeat work to iron out fluctuations in profit from less predictable and more traditionally orientated projects. This proved highly detrimental to the organisation to competitively win a bigger market share and grow the business. However, similar practices with the suppliers are also frequently used by the organisation. Thus, whilst opportunistic behaviour is condemned on the one hand (by the internal M&E supplier) it is legitimised on the other (by the organisation in its treatment of suppliers).

The benefits that accrue to long-term partnerships and repeat work are fully understood. However, the trend away from repeat work with clients would similarly suggest a shift away from partnering or supply chain management. Notably, partnering and repeat work are treated synonymously with supply chain management. Whilst some clients and main contractors do demonstrate a rhetorical intent to partner, operational experiences of partnering largely contradicts this intent. For example, the practice of 'open book', suggested at a strategic level in negotiations with clients, is understood to be merely used as a mechanism by operational project managers to lock suppliers to the cheapest price rather than a mechanism for achieving transparency, a mutual understanding of actual
costs or long-term relationships. Past and current experiences of partnering with main contractors are also drawn upon by informants in understanding the ongoing legitimacy of opportunistic behaviour despite the rhetoric of partnering or supply chain management. Clients are therefore do not support supply chain management or make attempts to delegitimise traditional opportunistic short-term thinking at an operational level. As already quoted:

"...the marketplace doesn't want it today"

However,

"We are contractors. However you want to contract, we will have to contract in the way they (clients/contractors) want to do it."

This 'way' it would appear is widely interpreted to be less concerned with supply chain management and more concerned with the trend towards traditional competitive tendering behaviour such as: lowest price; opportunistic behaviour; an emphasis on contract. The existence in the market of several players and the constant influx of new entrants to the market acts to legitimise clients focus on costs. Supply chain management is made sense of as a concept that does not apply to the current marketplace or context within which the organisation competes.

7.6.3.7 Operational project focus
Interpretations of supply chain management are dominated by an operational perspective. The ability to win bids for work through the efficiency gains attained via collaborative working relations with key internal and external suppliers, clearly informs interpretations of supply chain management. Informants also clearly understand the benefits of improved relationships with their clients and the benefits of repeat workload. They are also clearly sensitive to the benefits and problems of integration and collaboration with internal suppliers. Mostly, these
7.6.3.8 Implementation
The dominant interpretation that the main contractors are moving in the opposite direction to the rhetoric of supply chain management made nonsense of the implementation of supply chain management.

7.6.4 Summary
In summary, whilst improved trust, collaborative working and supply chain management largely reflect opportunities for achieving efficiency gains, informants are not actively engaged in such efforts. The legitimacy of lowest price and associated practices during bid and contract execution dominate and are institutionalised. The trend away from repeat/negotiated business with regularly procuring clients towards competitive tendering lends weight to this legitimacy. Informants also do not interpret supply chain management as a concept that moves beyond strategies to influence dyadic relationships. The notion of competing supply chains is therefore wholly absent in how informants made sense of supply chain management.

Knowledgeable and reflexive informants draw upon continuity of workload, the market structure, the legitimacy of short or long-term thinking and past experience of initiatives in making sense of supply chain management. Secondly these aspects of context follow a particular logic in how they are used to make sense of supply chain management. Notably, there is little to suggest that informants actively engage with and draw upon supply chain management theory. Indeed interpretations rarely move beyond the content of partnering and improving relationships. In the main supply chain management made little sense in the context the informants were rooted.

7.7 Findings from the cross-case analysis
The cross-case analysis draws upon the findings of each case study and sets out to find literal replication across the cases to support the
theoretical proposition. This analysis provided significant evidence of literal replication and is summarised in Table 12. The following sections draw upon the dominant aspects upon which literal replication is claimed and contributes to the development of explanations for how practitioners make sense of supply chain management.
### Table 12: Literal replication from the cross-case analysis
7.7.1 Proposition 1

Proposition 1 stated that:

*Practitioners interpret and draw upon specific aspects of context that shape and are shaped by how they make sense of the content of change. Practitioners within organisations in the construction sector will interpret and draw upon specific aspects of context in bringing meaning to, and making sense of supply chain management.*

The basis of literal replication is detailed in Table 12 and represented simplistically in Table 13 below:

<table>
<thead>
<tr>
<th>Proposition 1</th>
<th>Specific aspects of context</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short- or long-term frame of reference</td>
</tr>
<tr>
<td>A</td>
<td>✓</td>
</tr>
<tr>
<td>B</td>
<td>✓</td>
</tr>
<tr>
<td>C</td>
<td>✓</td>
</tr>
<tr>
<td>D</td>
<td>✓</td>
</tr>
<tr>
<td>E</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 13: Literal replication from the cross-case analysis of proposition 1

Every case provided literal replication that informants drew upon continuity of workload/repeat work in making sense of what they interpret to be central to supply chain management - relationships. What is particularly interesting is that this aspect of context is interpreted to shape relationships at the interface with commodity suppliers (Case A, B, D and E), service suppliers (Case A, C and E), repeat clients (Case A, B, D and E) or non-repeat clients (Case A-E) differently. Various levels of continuity of workload and repeat work exist at these interfaces. Even internal
relationships with other organisations in a group of companies are shaped by workload continuity (Case A, C and E). Three of the cases also provided literal replication that past experience with the concept of partnering on projects with main contractors (non-repeat clients) informed how the made sense of relationships (Case C-E). Indeed four of the cases provided literal replication that the content of supply chain management is interpreted to differ little from partnering. Every case provided literal replication that informants draw upon interpretations of legitimised structures within the organisation such as short or long term thinking and project costs over external relationships in making sense of what they interpret to be supply chain management – relationships.

There is literal replication that informants within organisations do draw upon specific aspects of context in bring meaning to and making sense of supply change management. These specific aspects of context are clearly identifiable as the level of workload continuity, organisational structures legitimising project based thinking in making decisions affecting relationships and, the past. Interpretations of these aspects of context by practitioners in the construction sector inform, in a way that differs from practitioners in other sectors, how they make sense of supply chain management.

7.7.2 Proposition 2
Proposition 2 stated that:

*Practitioners' interpretations of context and content contribute to an explanation of how they make sense of supply chain management. This may not necessarily resonate with theory. Indeed supply chain management theory may not make any sense at all to practitioners within organisations operating and competing in the construction sector.*

The basis of literal replication is detailed in Table 12 and represented simplistically in Table 14 below:
Table 14: Literal replication from the cross-case analysis of proposition 2

There are a number of aspects of theory that do not form any part of how informants interpret and make sense of supply chain management. In other words, informants' interpretation of the content of supply chain management does not draw upon systems thinking (Case A-E), competing supply chains (Case A-E), logistics (Case A-E), a strategic perspective (Case A-E), networks (Case A-E) or integration (Case A-E). There is therefore a basis for claiming literal replication that practitioners within organisations do not draw upon these theoretical concepts in how they make sense of supply chain management. This is perhaps not surprising since there is also a strong basis for claiming literal replication that the case study organisations do not, nor intend to in the future, engage in training activities regarding supply chain management (Case A-E).

**7.7.2.1 Drawing on aspects of theory**

What is surprising however is that all of the case study organisations are under pressure, either internally or externally, to develop or demonstrate that they are 'supply chain management' compliant. Such pressure is coming from the clients and main contractors. Indeed, Organisation A had been engaged in developing and attempting to implement supply chain management for three years prior to this research yet such change was attempted without the support of training or an engagement with theory. These organisations are therefore in the process of, and involved in,
attempting to make sense of supply chain management yet, recourse to theory and training is absent. It appears they are captured by, and place interpretations on the discourse of change associated with supply chain management rather than a direct engagement with theory. The meaning placed on supply chain management by informants in the case studies is therefore devoid of interaction with theory and dominantly informed by the discourse of supply chain management.

7.7.2.2 Meaning of supply chain management
The content of supply chain management is dominantly interpreted to be concerned with achieving efficiency through the development of better external relationships with clients and suppliers. Literal replication is achieved across all case studies that supply chain management means the move towards developing better relationships to achieve efficiency gains (Case A-E). These gains are understood to facilitate profit gains or a greater market share and competitive advantage in the market. It is therefore not surprising that literal replication is achieved (Case A, C, D and E) regarding the interpretation that supply chain management is merely the next fad and fashions since it is interpreted to differ little from the content of partnering. Supply chain management is interpreted to mean the recycling of partnering within the sector and is supplemented by an interpretation that partnering has, at least between main contractors and suppliers, proved problematic – not least because informants draw on interpretations of context such as workload continuity and the nature of markets in making (non)sense of the relevance of partnering relationships with main contractors.

7.7.2.3 Strategic or operational focus?
There is literal replication that informants largely interpret supply chain management from an operational purchasing perspective (Case A-E). Some understanding of logistics is alluded to by informants in case study B, D and E although this is not overtly drawn upon as an aspect of supply chain management but merely a by-product of particular relationships with commodity suppliers. The meaning placed on supply chain management as a concept dominated by a concern for relationships and
efficiency supports this interpretation. How informants make sense of supply chain management therefore is largely informed by an understanding of relationships in context. This related to both how various types of suppliers are procured and, the basis upon which the services of the organisations are procured by a variety of client bodies including main contractors. Their interpretations do not however, as already noted for each case study, understand, engage with and embrace the relational interfaces between networks of organisations or a chain of organisations competing for work in a market – it is a dyadic perspective. Arguably, the concept of a competing supply chain within the construction sector is so far removed from the experienced reality of informants that webs of relationships in networks of organisations form no part of how they view supply chain management relationships.

7.7.2.4 Relationships
The concept of the internal supply chain and the need for progressive integration and collaboration beginning with the internal relationships is not drawn upon by informants in making sense of supply chain management. Indeed there is literal replication that various parts within these organisations are disconnected with respect to the aspirations to improve external relationships by one department and action on behalf of another part of the organisation – say project managers (Case study A, C and D). Aspirations of change regarding improved external long-term relationships do not make sense to reflexive informants in a system interpreted to be dominated by the legitimacy of short-term thinking and project costs over developing and maintaining long-term relationships (Case study A, C and E). Informants from three of the case studies (Case A, C and E) also provided literal replication that relationships between organisations that comprised the same family were orientated traditionally and not characterised by integration or collaboration. Indeed. One case study showed that the organisation had recently moved away from collaborative internal supply relations with its sister company. Much of the problems associated with this relationship related to market structures and the pressures placed upon project based organisations by the
market. Clearly, whilst the internal supply chain is not drawn upon directly as an aspect of supply chain management, internal integration and collaboration remain an aspiration. An inability to integrate and collaborate internally arguably places considerable doubt on the ability of such organisations to integrate and collaborate externally with suppliers.

Two different forms of suppliers are identified by informants in the case studies: commodity or product suppliers and; service suppliers. Key suppliers of products and commodities across four of the case studies were procured on the basis of single and dual sourcing arrangements. The relationships with these suppliers were characterised by collaborative problem solving, high levels of dependency and trust. Continuity of workload is used as the basis of determining these long-term relationships that transcend projects. These arrangements typically take the form of discounted prices related to quantities ordered. Trust and interdependency are accepted to make sense in this context.

Relationships with service suppliers however were not characterised by collaborative problem solving, high levels of dependency and trust. The absence of continuity of workload and the legitimacy of project based thinking regarding costs makes nonsense of any notion of long-term strategic relationships that transcend projects. Opportunistic behaviour dominates and is legitimised in this context. Interpretations of the discourse of supply chain management fail to resonate with the concerns and issues faced by practitioners rooted in the context of procuring the services of suppliers. No continuity of workload can be offered and thus the legitimacy of improving relationships ala partnering or supply chain management does not make sense to practitioners in this context. This inability to provide continuity of workload to service suppliers is mirrored by the inability of the organisations in the case studies to acquire from their clients or main contractors a predictable and continuous flow of workload. The unpredictable and discontinuous flow of work through project based organisations such as Cases A-E make long-term relationships with service suppliers difficult if not nonsense.
Two different forms of clients are identified in the case studies (Case A, C, D and E): Repeat clients and non-repeat clients. Relationships with repeat clients are understood to be characterised by long-term collaboration, dependency and problem solving and learning. These characteristics are understood to be heavily reliant on the existence of workload continuity and thinking and decision making based on the maintenance of the relationship over project costs in the long-term. Non repeat clients however differ for exactly the same reasons (Case A-E). In this respect, suppliers’ relationships with main contractors are dominated by opportunistic behaviour, low levels of dependency and little trust (Case B, C, D and E). These are made sense of in a context where there is no workload continuity and project and costs based thinking dominates over developing and maintaining long-term relationships. Repeat clients within each case study do not dominate the workload flowing through the organisations. Main contractors therefore cannot provide back to back conditions with suppliers working on projects associated with repeat clients – they cannot provide a sufficient level of workload continuity to support collaborative relationships with these suppliers despite repeat work from clients.

7.7.2.5 Overview
In summary, supply chain management does not make sense to practitioners in the construction sector. Interpretations of the content of supply chain management as little more than improving relationship ala partnering do not make sense to practitioners who simultaneously interpret a lack of workload continuity flowing through their organisations to facilitate improved relationships. Without such continuity flowing through organisations providing and procuring services, collaborative, long-term, highly interdependent and trusting relationships make little sense. The inability of partnering to challenge the legitimacy of structures that support a lack of workload continuity informs and mirrors practitioners’ interpretations that supply chain management is nonsense.
7.8 Chapter summary
Each individual case was analysed and the findings presented separately against the two propositions developed from the theory reviewed in chapter 2-5. Practitioners in organisations competing in the construction industry interpret supply chain management to be little more than a call to improve relationships with external suppliers to facilitate efficiency gains. Relationships are made sense of by practitioners through an interpretation of the context within which the relationships are rooted. These contexts differ across interfaces and are also dependent on the nature of what is being procured. The interpretation that continuity of workload is absent within the construction sector is largely presented as the main basis for interpreting that the implementation and sustainability of supply chain management does not make sense in organisations competing in the construction sector. The cross case analysis also provided literal replication to support these findings.
8 CHAPTER 8 – DISCUSSION, CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

8.1 Introduction
This chapter is concerned with outlining a discussion of the findings from the previous chapter and their relevance. The discussion also introduces a broad picture of the construction sector from available sources as a way to locate and support the findings. Flowing from this discussion a number of conclusions are drawn from the research. Reflection on research, the research process, findings, and discussions leads the author to present a number of recommendations for further research. Such reflection also allows the author to posit a number of limitations regarding the research.

8.2 Discussion of case study findings

8.2.1 Supply chain management or partnering?
The absence of any form of education or training courses to promote the theoretical content of supply chain management is notable. Informants were able to discuss supply chain management, but do this largely by drawing on how external relationships can be improved. In this respect, relationships are understood to reflect an important aspect of supply chain management theory. However, the dyadic level (see Harland 1996) at which informants understand and discuss these external relationships is inseparable from the content of partnering (see Bennett and Jayes 1995; 1998). The unit of analysis for informants regarding supply chain management therefore does not extend beyond those immediate boundaries where organisations have traditionally attempted to influence, control and manage relationships. Indeed, informants' interpretations of supply chain management refer consistently to partnering.

The inability to separate supply chain management from partnering reflects the concerns of Pearson (1999) and, McBeth and Ferguson (1994). Drawing on relationships, they are both dominantly underpinned
by the same simplistic argument in the construction sector — collaboration is good and arms-length contractual relationships are bad. Thus, attempts to implement such change have a longer pedigree than the short-lived discourse of supply chain management in the construction sector would suggest. The research reported here therefore tested the underlying theory of both partnering and supply chain management against how practitioners in construction organisations made sense of intra and inter-organisational relationships. Knowledgeable and reflexive informants demonstrated that various types of inter-organisational relationships are legitimised within organisations by drawing on aspects of context and organisational structure. Demonstrating how practitioners draw upon aspects of context in making sense of supply chain management confirms the limitations of approaches that strip context from research inquiry (Nutt 2000; Swan et al. 1999). Furthermore, it reinforces arguments surrounding the problems inherent in universalistic assumptions underpinning best practice (see Purcell 1999; Marchington and Grugulis 1998; Wood and de Menezes 1998; Mouritsen et al. 2003). In particular, Cox and Ireland's (2002) assertion of poor thinking in the construction sector that is argued to be underpinned by these assumptions is also supported.

8.2.2 The heavy hand of the past
Past experience of partnering, in particular between the subcontracting organisations (such as Case B-E) and main contractors (such as Case A), was also shown to influence how informants made sense of supply chain management relationships. Past experience of adopting partnering with non repeat clients such as main contractors and service suppliers were reflected upon by informants. These experiences have been largely poor. Much of this failure of partnering to deliver expected efficiencies is related to aspects of context such as continuity of workload and the legitimacy of short-term thinking. Thus, the content of supply chain management, understood to be underpinned by improved relationships, similarly made little sense to informants — they had been there before with partnering. This need to engage with the past is inherent in contextual
approaches. The need to engage with the heavy hand of the past (Massini et al. 2002) and Pettigrew’s (1997) understanding that change must be understood to unfold over time are therefore confirmed by this research. Past experience with partnering is influential in how informants made sense of supply chain management yet absent in calls for the adoption of supply chain management.

Why those responsible for setting the change agenda within the sector do not similarly reflect upon past experiences with partnering is rather curious. It would seem the continuous search for best practice marginalises the need to reflect upon the past. It also acts to disconnect managerial practice from context and reflects and supports Beer et al’s. (1993) understanding of why change agendas frequently fail to deliver their aspirations (see also Kumaraswamy et al. 2002). The change agenda would benefit from attempts to learn from experiences of past initiatives such as partnering and best practice (see Martin and Beaumont 1998; Purcell 1999) rather than simplistic attempts to learn across business sectors. Even if the industries propensity to import knowledge (Gavigan et al. 1999) suggests the dominance of the latter.

To a certain extent industry reviews do present the opportunity to learn in this respect, however, they tend to reiterate familiar concerns. These concerns are largely understood to be resolvable issues and removable barriers rather than being understood to represent the strategic legitimacy of practice rooted in an understanding of the construction sector. Familiar concerns prevail in the reviews because the strategic legitimacy of how organisations operate and behave remains misunderstood and, thus, largely unchallenged. The argument for the adoption of a contextual approach (see Pozzebon 2004) that recognises the recursive relationship between context and practice (Fernie et al. 2003b) within this thesis is supported by the findings. The findings have shown a significant difference between theory and practice which is largely explained through an understanding of context and the past. The approach has allowed alternative explanations regarding how reflexive and knowledgeable
practitioners in construction organisations made sense of supply chain management. Notably, such sensemaking does not reflect the aspirations of the change agenda's calls for productivity improvement in the sector. These calls are acontextual and fail to understand the contextually rooted nature of managerial practice through which the content of change must be negotiated.

8.2.3 Relationships
Aspirations to collaborate under the label of supply chain management differ little from failed attempts to adopt and sustain collaborative relationships under the label of partnering. Indeed, the case study organisations provide little confidence that project partnering is proving sustainable let alone evolving generations of partnering such as that described by Bennett (1998). Thus, competing supply chains (Spekman et al. 2002; Vokurka et al. 2002) and optimisation of flows across a number of organisations through time over numerous projects, strategically and operationally aligned, remain an aspiration despite partnering or supply chain management. Indeed, these aspirations do not make sense to practitioners embedded within construction organisations.

Whilst the content of supply chain management may be myopically concerned with the adoption of partnering, collaboration or improved relationships, how practitioners made sense of these relationships is still highly relevant in testing supply chain management theory. Indeed, relationships underpin much of the content of supply chain management theory as noted in chapter 3-5. Adopting partnering or improving relationships (and collaboration) with clients and/or service suppliers for operational efficiency gains made little sense to informants. Connecting the acontextual argument that organisations can achieve efficiency gains if they adopt collaboration and integration as their modus operandi with, how informants make sense of these arguments in context, debunks any idea of partnering or supply chain management in the construction sector. Indeed, calling for the adoption and maintenance of opportunistic behaviour and arms-length contractual relationships with non-repeat
clients and service suppliers might be more appropriate – if little else these made sense. However, directing practitioners towards how they can improve opportunistic behaviour and exploit arms-length contractual relationships forms no aspect of the agenda for change in the sector. There are a number of important findings arising from the research to support the assertion that knowledgeable and reflexive practitioners draw upon context in making sense of relationships. These are also largely instrumental in challenging organisations responsible for setting the change agenda to adopt a ‘view from somewhere’ rather than a ‘view from nowhere’ such as acontextualism.

Firstly, and perhaps most importantly, collaborative relationships such as partnering make sense if there is continuity of workload to hold these organisations together. In the construction sector, this is best understood to be repeat work given to an organisation by clients (or main contractor/subcontractor depending where the organisation is in the supply chain) with an ongoing commitment to procure in the market. Whilst the findings indicate that repeat clients providing workload continuity are evident in the sector, they also indicate that such clients are neither in the majority nor in the ascendency. To this extent the findings indicate that organisations do enter into partnering arrangements and collaborative working with some clients. Indeed, some clients will partner with a main contractor and a number of key subcontractors for either repeat work or a particularly large complex project such as Terminal 5, a pharmaceutical plant or a number of supermarkets for a single client. Repeat work is however not evident to be flowing from main contractors and, is supported by the findings that subcontractors' prefer to work for clients rather than main contractors.

The findings also demonstrate that despite workload continuity from repeat clients, workload flowing through most construction organisations remains largely discontinuous and unpredictable. Organisations have many clients (or work for many main contractors/subcontractors) and are rarely in a position where they will not tender for more work to fill the
order book. It is clear that informants fully understand that collaboration without workload continuity does not make sense; the models provided by Scott and Westbrook (1991) and Spekman et al. (1998) clearly support this sensemaking. The percentage of customer purchases that come from the supplier are low as well as the percentage of the suppliers' sales that go to the customer (Scott and Westbrook 1991). In these circumstances, there is little basis for a dependent relationship between the parties. The strategic importance of the relationship and its complexity between non-repeat clients and construction organisations (Spekman 1998) characterises these relationships as arms-length or cooperative. Collaboration is not an option because it does not make sense. Informants made sense of relationships in much the same way that the theories of Scott and Westbrook (1991) and Spekman (1998) suggest. Their interpretations also resonate with Cox's (2004) understanding of the use of power by organisations in markets. Notably, knowledgeable and reflexive practitioners understand that contexts differ between particular clients and suppliers.

Secondly, the collaboration is good and arms-length contractual relationships are bad argument makes little sense when connected to how practitioners make sense of relationships. The legitimacy of the argument falls apart when related to how organisations structure themselves and set strategy in accordance with their interpretations of the market. It is also notable that the argument that operational efficiency gains can be achieved by using collaboration made little sense to informants where the context was characterised by a lack of workload continuity and interdependency. The operational efficiency argument also falls apart if not similarly supported by an organisations strategy to develop collaborative relationships in the marketplace to support, maintain or manipulate their position in the market.

Continuity is evident in the construction sector if the nature of what was being procured or sold was a commodity. The procurement of commodities by organisations was understood to be characterised by
workload continuity. The percentage of customers’ purchases that come from the supplier for a product may be high in most cases as well as the percentage of the suppliers’ sales that go to the customer (Scott and Westbrook 1991). In these circumstances, there is a basis for a dependent relationship between the parties. The strategic importance of the relationship and its complexity between commodity suppliers and construction organisations (Spekman 1998) also places these transactions as either co-operative or collaborative. In such circumstances levels of trust are likely to be high since the organisations can be more confident that the other will not exploit their vulnerabilities (Korczynski 2000). Informants understood this in providing explanations for how they made sense of relationships with commodity suppliers. Most had single or dual sourcing arrangements in place. These relationships were also frequently characterised by an understanding that the suppliers were ‘good for their problems’. These suppliers were dependent on the relationship in the long-term. The legitimacy of costs alone did not characterise how these relationships were understood to be enacted.

Thirdly, informants interpretations of context in shaping relationships with clients and suppliers also relates to Scott and Westbrook (1991), Spekman (1998) and Cox and Ireland (2002) and Cox et al. (2002) theories. Without workload continuity, little basis for moving towards dependent or collaborative relationships, organisations will inevitably legitimise short-term thinking in making decisions that affect relationships with clients and suppliers. This will also act to legitimise a focus on costs rather than relationships and on how organisations exercise or defend against the use of power in open market negotiations.

Informants were shown to be highly knowledgeable and reflexive (as suggested by Giddens 1999) in how they make sense of change regarding supply chain management. Based on their interpretations and reflections on context, practitioners clearly understand the logic behind using a variety of relational forms with various clients and suppliers. They make a distinction between non-repeat and repeat clients regarding their
ability to provide workload continuity. They also make a distinction between service and product/commodity suppliers based on an ability to support certainty regarding costs, quality and delivery. Practitioners are therefore not irrational (Sturdy and Grey 2003) and demonstrate knowledge of and reflection upon logic in determining the legitimacy of particular relationships. Notably, it is at the interface between subcontractors and non-repeat clients such as main contractors where supply chain management – collaborative relationships – made little sense to the informants. Such interfaces are largely characterised by a lack of workload continuity.

8.2.4 Connecting the argument to industry context

The findings regarding relationships are further strengthened when connected to a picture of the construction sector. The latest Department of Trade and Industry (DTI) figures for the UK construction industry show an annual output of £83.59bn and a seasonally adjusted provisional employment figure of 1,599,000 (DTI, 2003a). Whilst the number of employees in the sector appears inconsequential, the 605,000 figure for those self-employed is substantial. The sector is dominated by 122,220 SMEs (Small and Medium Sized Enterprises but excluding sole traders (DTI, 2003b). The public sector continues to account for a significant percentage of construction output making it the most influential client base within the construction sector. The UK construction sector repair and maintenance figures (a significant contributor to operational costs) are also highly relevant since they represent 46% of the annual output figure of £83.59bn (DTI, 2003a). It must also be noted that every domestic and commercial property owner in the UK is, has been, or will be occasional clients of the construction industry. This coupled with regional markets directly contributes to and reflects high levels of fragmentation, low levels of workload continuity, little interdependency and communication between organisations and ultimately low levels of trust.
This broad picture is exactly why Korczynski (2000) describes the sector as a low trust economy. This argument is supported by how informants have been shown to make sense of supply chain management and partnering relationships in this thesis. Best practice initiatives aimed at introducing collaborative working, teamwork and the introduction of higher levels of trust and interdependency frequently fail to gain any purchase in this context. Indeed, supply chain management has failed to gain any purchase in this context as this research has demonstrated. Hence, initiatives calling for alternative managerial practice to address these stubborn problems persist. Notably, it is not because long-term collaborative relationships do not present the opportunity to provide efficiency gains just that such relationships made little sense to informants in the context of construction organisations.

8.2.5 Client concerns and industry concerns

Perhaps one of the most important findings from this research is the recognition that whilst arms-length contractual relationships may be characterised as a problem for some stakeholders in the construction sector, for others it is a legitimate strategy given the context within which they operate and compete. Few stakeholders however would give voice to this latter view of arms-length contractual relationships since to do so would run the risk of being ostracised by their own clients (repeat or not). Yet, clients' calls for change lack the power to institutionalise such change in the sector. These calls also demonstrate little understanding of the competitive context within which construction organisations operate and compete. They fail to engage with the context within which strategic relationships are legitimised and why. Whilst repeated calls for change make sense operationally to the clients of the sector, they make little sense to organisations competing within context of the construction industry. Repeated calls for change based on this operational argument therefore fail to penetrate the construction sector in any meaningful and sustainable way. As a result, familiar concerns are reiterated over time, as Murray and Langford's (2003) review of industry reviews suggests. Supply chain management according to this research follows a similar
path in outlining a simplistic operational argument that cannot sensibly be legitimised within the sector by organisations competing within the particular structure of the construction sector.

The findings confirm the argument that research and analysis of managerial practice in the construction sector would benefit from the application of contextual approaches such as that proposed by Pettigrew et al. (2001), Bloodgood and Morrow (2003) and Sturdy and Grey (2003). These approaches also recognise that practitioners are knowledgeable and reflexive and present an opportunity to understand the legitimacy of current practice as the basis of setting change for the future.

8.3 Reflection on original research objectives, question and problem

This thesis began with highlighting the research problem, a research question and a number of research objectives. The following reflects upon these and discusses the contribution of the research to each individually. The research objectives (01-O4) are addressed first and, form the basis of determining the contribution of this thesis to the research question and subsequently the research problem. The last aim (O5) of the research draws on this reflection and discussion (see 8.2) to generate a number of specific conclusions. The conclusions are however presented in a separate section (8.4).

8.3.1 Research objective 1 (O1)

O1: Explore and highlight contextual approaches for understanding managerial practice that challenge notions of the simplistic transfer and relevance of supply chain management to the construction sector

This first aim (O1) was largely achieved by reviewing the assumptions that underpin 'best practice' and the transferability of managerial practice from one context to another. Chapter 2 outlined a number of theoretical concerns surrounding these assumptions that underpin recent calls for change in the construction sector. This review supported the argument
presented in the introduction for more contextually orientated approaches to inquiries into the relevance of supply chain management in the construction sector. The second part of the chapter presented widely available research literature directed towards developing methodological approaches that captured the recursive relationship between context and practice in analysis of managerial practice. Significant support for their adoption and use by management researchers and academics is also presented in chapter 2 to support the rationale for its adoption in this research thesis. Specific examples of the adoption of contextual approaches to managerial inquiry provide a rigorous framework for the research. What is surprising is why such approaches remain outwith the construction management literature given the propensity of those in the sector to import knowledge (see Gavigan et al. 1999). It is also rather surprising that the availability of such approaches and the widely understood problems of 'best practice' and transfer of practice across contexts remain under explored in calls for change in the construction sector. Such a failing may largely be instrumental in explaining the reiteration of familiar concerns within the content of industry reviews. Chapter 2 is therefore instrumental in providing a contextual approach for understanding managerial practice that challenged notions of the simplistic transfer and relevance of supply chain management to the construction sector.

8.3.2 Research objective 2 (O2)

O2: Develop a broad theoretical understanding of supply chain management, key issues and concerns from organisation studies and mainstream management literature as well as the construction management literature

This aim was addressed throughout chapters 3-5. A broad understanding of supply chain management was presented via a literature review. This presented a number of issues pursued within the case study analysis. For example, the drivers for change to implement supply chain management are frequently referred to as globalisation pressures on organisations — a
pressure not present in the construction sector. Understanding what is
driving the implementation of supply chain management was therefore
pursued in the case study analysis. Similarly, is supply chain
management a fad, do practitioners draw on theory and do they prescribe
or describe supply chain management, also informed the analysis.
Specific theoretical perspectives on supply chain management were also
presented in chapter 4 and drawn out from a literature review. This
contributed to a broad understanding that captured aspects of logistics,
purchasing and strategic positioning as the basis of testing supply chain
management theory against practitioners experienced reality. A number
of key aspects of supply chain management theory were also drawn out
to form the basis of testing theory. Notably strategic and operational
perspectives are understood to be interrelated whereby, relationship
management informs the aspirations of both. Simply put, collaborative
relationships only make sense if they form the basis of achieving the
aspirations of strategic and operational management.

Finally, Chapter 5 reviews the construction management literature to
develop an understanding of current research and the direction and
content of such research. The review presents an understanding of how
supply chain management is perceived and addressed within this
literature. In the main, the simplistic operational argument that
collaboration improves efficiency seems disconnected from the strategic
perspective on collaboration outlined in the mainstream management
literature. How the content of supply chain management theory in the
construction management literature differs from the content of partnering
remains unclear. Much of the content focuses on dyadic relationships and
rarely concedes to understanding relationships from a strategic and
operational perspective within context. This literature is also remiss in
identifying and pursuing how supply chains can be sustained and
stabilised to compete collectively. In conclusion, this review is
instrumental in confirming the arguments presented in the introduction for
more contextually orientated approaches to inquiries into supply chain
management in the construction sector.
8.3.3 Research objective 3 and 4 (O3 and O4)
O3: Offer an explanation of how practitioners within construction organisations make sense of supply chain management.
O4: Compare, contrast and highlight tensions between O2 & O3.

These research objectives are directed towards testing the content of supply chain management theory against the experienced reality of practitioners in the construction sector. They therefore draw on the content of the first two aims in outlining the theoretical content of supply chain management (O2) and, an approach sensitive to engaging with practitioners experienced reality of the content of supply chain management in context (O1). The methodological rigour required of academic research in applying this approach is explored and provided in chapter 6. The chapter provides ontological, epistemological and methodological information to provide a basis for understanding the researcher and author of this thesis as a conversational partner (Miles and Huberman 1994). The multiple-case study research strategy adopted provides the necessary rigour required in presenting robust explanations of how practitioners within construction organisations make sense of supply chain management (O3). This research strategy also presents, through the use of theoretical propositions and the analytic strategy of literal replication, the basis of comparing and contrasting theory with reality (O4). From this process follows a basis for presenting the tensions between theory and practice (O4). Chapter 7 presents the analysis and findings from the case study strategy and provide explanations for how practitioners make sense of supply chain management.

8.3.4 The research question (Q1)
Q1: How do practitioners within construction organisations make sense of supply chain management?

The research question was focused on engaging with and understanding the reality (Walsham 1993) of supply chain management in construction organisations from practitioners' perspectives. The contextual
approaches outlined in chapter 2 form the basis upon which the case study analysis in chapter 6 sought to engage with and understand how practitioners make sense of supply chain management in a particular context. The analysis in chapter 7 provides explanations for how practitioners make sense of the content of supply chain management within the context of their respective organisations.

Prior to discussing how practitioners make sense of supply chain management it is important to note that interpretations of the content of supply chain management reflected little understanding of theory. Relationships did feature prominently within interpretations of supply chain management and provide a basis for testing supply chain management theory. The understanding of a need for improved relationships does not extend current understanding and experience with partnering. In making sense of these relationships, practitioners drew upon a number of aspects of context consistent across the case studies in how they made sense of supply chain management relationships. In summary:

**Supply chain management does not make sense to practitioners within construction organisations**

The explanation for why it does not make sense is simple. The context within which organisations are structured, operate and compete acts to strongly legitimise arms-length contractual relationships between organisations. These relationships are predominantly used at the interface with service suppliers and do not characterise relationships with product and commodity suppliers. Calls for change and productivity improvement (Rethinking Construction 2002; Strategic Forum for Construction 2002; DETR 1998; Latham 1994; NAO 2001) are predicated on an understanding that the dominance and legitimacy of arms-length contractual and opportunistic relationships can be challenged on the basis of operational efficiency gains. They do not however demonstrate an understanding of the legitimacy of such relationships strategically and,
nor do they consider why it makes sense for organisations in the construction sector to act in uncooperative and opportunistic ways. Clearly, as this research demonstrates, the legitimacy of arms-length contractual relationships made sense to practitioners in the construction organisations. This is not an indication of 'illnesses' (DETR 1998), reflective of 'traditional bad ways of both thinking and practice' (Fischer and Green 2001), a plague (Kagioglou et al. 2000) or a blindness of the industry to its failings (Cain 2003).

It is also important to note that practitioners clearly demonstrated that they are knowledgeable and reflexive in how and, in what contextual circumstances, collaboration and partnering relationships made sense. Indeed, trust and interdependency do characterise inter-organisational relationships within construction organisations on those occasions where it made sense. The use of similar logic in making sense of arms-length contractual relationships is also evident in how practitioners made sense of supply chain management. Practitioners are therefore not backwards (Woudhuysen and Abley 2004), irrational (Sturdy and Grey 2003) or dilettantes (Fernie et al. 2003a). Chapter 7 shows how they made sense of supply chain management in particular inter-organisational relationships and it is clear that it follows a particular pattern and logic largely ignored by acontextual calls for change in the sector. Practitioners are indeed not irrational in how the react to change (Sturdy and Grey 2003). Quite the opposite.

8.3.5 The research problem (P1)

P1: The assumptions that underpin the calls for change in the construction sector are acontextual and atheoretical. They fail to engage or resonate with the experienced reality of practitioners operating within organisations in the construction sector. Recent calls for change regarding the adoption of supply chain management in the construction sector are underpinned by these assumptions.
The problem has been addressed and reflected upon constantly throughout the process of the research and the writing of the thesis. In doing so a greater understanding of the problem has evolved and an understanding of how this manifests itself in the construction sector has emerged. Calls for supply chain management are found to be acontextual and to an extent atheoretical. The experienced reality of practitioners in construction organisations confirms that supply chain management does not resonate with their concerns. Practitioners also demonstrated that reflection on past experience with industry initiatives remains absent from current calls for the adoption of supply chain management. Without such reflection, acontextual and atheoretical calls for change will most likely dominate the sector in the future. Whist this thesis challenges the assumptions that underpin these calls; it does not attempt to engage with the legitimacy of why and how those who set the change agenda are motivated to adopt such assumptions. Much of what has been uncovered during this research regarding the research problem is captured in the next sections – Conclusions, recommendations and limitations.

8.4 Conclusions, limitations and recommendations (O5)
O5 Draw out conclusions, limitations and recommendations from the research.

There are a number of conclusions, limitations and recommendations flowing from the research that have been captured and codified below. These represent considerable reflection upon the content of the thesis and resonate with the concerns of the author. Notably, it is conceded that readers of this thesis may find a number of other conclusions, recommendations and limitations that resonate with their own particular concerns.

The process of reflection is directed towards a number of aspects of the thesis notably: the movement for change (see sections 1.2 and 2.2); the use of a contextual approach for conducting organisational inquiry (see sections 1.4 and Chapter 2); supply chain management theory (see
chapters 3-5); inquiry paradigm and methodology (see Chapter 6) and; the testing of theory via a multiple case study design (see Chapter 6 and 7).

8.4.1 Conclusions

1. It does not make sense for organisations in the construction sector to adopt, implement and sustain supply chain management. Supply chain management fails to resonate (Hodder 1998) with their contextually rooted concerns and interests.

2. As noted in section 2.2.2, interpretations of supply chain management, relevant issues, opportunities and concerns of knowledgeable and reflexive practitioners did challenge universalistic assumptions regarding its relevance. This also largely acts to prove Purcell (1999) Harrison (1998) Cox and Ireland (2002) and Mouritsen et al. (2003) to be right in suggesting the limitations of best practice. Indeed, it is concluded in this thesis that best practice is a myth.

3. Practitioners interpreted supply chain management as an initiative focused on addressing and improving dyadic relationships with external organisations. This fails to achieve any conceptual distance or distinction between supply chain management and partnering. Indeed, supply chain management is considered to be synonymous with partnering.

4. Practitioners reflected upon past experience of partnering in how they interpreted the relevance of supply chain management. Reflection on partnering however forms no aspect of the calls for change regarding supply chain management. Calls for change in the sector are unreflective of past experiences with previous initiatives.

5. Calls for the adoption of supply chain management demonstrate a lack of reflection upon the context within which it has proved successful as well as the institutional context within which organisations in the construction sector compete. They are acontextual.
6. Phillips et al.'s (2000) separation of power required to negotiate the content of change and that required to institutionalise change is clearly evident in this thesis (see 2.5.6). Despite the apparent discursive legitimacy of organisations such as Constructing Excellence, Be and rethinking construction to negotiate the content of change such as supply chain management for the construction sector as a whole, they do not have the power to institutionalise this change. The reach of their power to negotiate and institutionalise supply chain management in the construction sector is related to their ability to confer workload continuity on main contractors. They do not have the power to effect and institutionalise such change through and across a network of organisations. They are also not wholly representative of the sectors clients and as such their ability to confer significant workload continuity in the sector limited. In such a fragmented sector it is extremely difficult to determine who holds, or can mobilise such power. It is therefore concluded here that large repeat clients in the construction sector and those who populate the movement for change lack the power to widely institutionalise change in the sector.

7. The research concurs with Woudhuysen and Abley (2004) in calling for greater intellectual rigour and reflection on how organisations such as CE and Rethinking Construction, or the technocratic elite as Green (2003; 2002) puts it, reflect upon and engage with the construction sector in making recommendations for change.

8. Adopting a contextual approach in this thesis as a way to explore how practitioners made sense of supply chain management provided significant insight into both the legitimacy of arms-length contractual relationships and collaborative long-term relationships. Under particular circumstances, each made sense and achieved legitimacy. This concurs with Cox (1996), Spekman et al. (1998) and Stuart and McCutcheon's (2000) proposition that no one specific relational form is suitable for all circumstances (contexts).
Practitioners are knowledge and reflexive regarding the legitimacy of practice in particular contexts. They adopt a pluralistic approach to the legitimacy of relationships. They know when collaborative relationships make sense – The context to support such collaboration however rarely exists in the construction sector.

9. Competing supply chains and the optimisation of flows across numerous organisations do not make sense in the construction sector.

10. Practitioners in the construction sector are not dilettantes, irrational or backwards. Practitioners are highly knowledgeable and reflexive in how they interpret, legitimise and institutionalise managerial practice. Understanding, framing and implementing change requires policymakers, clients and industry bodies to reflect upon and engage with these highly knowledgeable and reflexive practitioners.

11. Calls for change need to understand the legitimacy of current practice and thus the scope for sustainable productivity improvement in the sector.

12. Past reviews, and the concerns of the clients, fail to engage with and recognise the legitimacy of arms-length contractual relationships in the construction sector. These relationships and opportunistic behaviour are legitimate organisational strategies in the construction sector despite dichotomised thinking placing these as ‘bad’ and, collaborative and long-term relationships as ‘good’. Calls for change are therefore based upon a simplistic, utopian and acontextual assumption.

8.4.2 Limitations

1. The ontological and epistemological assumptions adopted in this thesis were argued in chapter 6 to represent only part of the process of achieving a wider, deeper understanding of the phenomenon of interest. This was largely based on Weaver’s (1994) understanding of structuration as a meta-theory whereby paradigms of inquiry are not so much incommensurable but
recursively related. Combining, relating and discussing the results from a variety of ontologically orientated inquiries would arguably posit a more robust understanding of the phenomenon of interest. This thesis represents only one bracketed (see Weaver 1994) perspective and thus is limited in providing this wider, deeper understanding. The research in this thesis is limited by the authors ‘ontological affinity’ (Pozzebon 2004).

2. In Chapter 6 it was conceded that methodology was principally concerned with making explicit a number of choices facing the researcher and, avoiding gross misfit between the objectives of the research and methodology. This did not discount the use of various methodologies in pursuing the objectives of the research merely that choice has to be informed by a number of influential factors. Notably, action research was not chosen principally for practical reasons and may have provided an alternative research strategy to compete with case study research in providing a better fit.

3. The use of contextual approaches are argued to provide a greater understanding of the recursive relationship between context and practice over time. Largely, longitudinal research is considered to provide a wider understanding of continuity of change over time. This represents an active engagement with the heavy hand of the past and the process of catching reality in flight. The research in this thesis has been unable to conduct longitudinal research. Thus, the results are limited to practitioners’ interpretations of the past rather than an active engagement with evolving and emergent interpretations of context and practice over time. There are however particular difficulties facing scholars keen to engage with longitudinal research – the nature of research funding. Furthermore, for PhD students, a move towards more rigid limited registration periods also acts to limit the opportunity to conduct longitudinal research.

4. Practitioners interviewed during the research were considered pivotal in making sense of the implementation and application of
supply chain management. Practitioners in the organisation responsible for developing strategy and determining organisational structure remained outwith the empirical data. In hindsight, it could be argued that the research would have benefited from engaging with these practitioners in order to gain an understanding of their action regarding strategy and organisational structures. These practitioners draw directly from an understanding of industry structure and markets in how they made sense of strategic relationships. This would have provided a greater understanding of the recursive relationship between what Pettigrew (1987) describes as the outer context and supply chain management. The discussion section (8.2.4) attempts to introduce a picture of this wider context that would have benefited from empirical evidence.

### 8.4.3 Recommendations

1. There is a need for research that focuses on understanding the current legitimacy of managerial practice in the construction sector. Contextual approaches such as structuration, sensemaking and new institutionalism provide sufficiently robust research frameworks to support such research. These findings would support calls for change that resonated with the concerns of industry practitioners. Such findings would also be largely instrumental in shaping a more realistic agenda for change in the sector. There is currently a collaborative research project called ‘Big Ideas’ (to being in Easter 2005) that is sponsored by EPSRC and three Innovative Manufacturing Research Centres that makes a step in this direction. It is however only a three year project.

2. There is a need for longitudinal research in the sector that is directed towards engaging with and understanding the dynamics of change over time – to actively engage with the heavy hand of the past. This would also draw upon the recommendation outlined above in adopting contextual approaches that explore the recursive relationship between context and practice. It is possible
that this may be achieved by reviewing, renewing and building upon the 'Big Ideas' project.

3. It is necessary for calls for change in the sector to incorporate a process of review to determine how the content of the change called for is made sense of by practitioners in the construction sector.

4. The academic research community needs to make better connections with the organisations calling for change in the sector. In doing so, calls for change may achieve a higher degree of intellectual rigour that they do at present.
9 REFERENCES


Europe.* European Commission Directorate - General JRC Joint Research Centre, Institute for prospective technological studies, TECS Futures programme.


through clusters." Construction Management and Economics, 19, 37-47.


APPENDICES
Appendix 1
A. Overview of Case Study Project
The scope of this case study project is to generate an understanding of supply chain management rooted within organisations competing in a construction context. The research problem is therefore focused on engaging with and understanding the reality of supply chain management in construction organisations from a practitioner's perspective. The research conducted in this case study project is therefore particularly designed to provide an alternative basis for engaging with and understanding contemporary supply chain management theory. It is argued that engaging with practitioners' interpretations of both the content of supply chain management and context will contribute to a greater understanding of supply chain management theory and practice within the construction sector.

The thesis is therefore not concerned with developing and advocating the adoption of supply chain management tools and techniques for either implementation or application of supply chain management in the construction sector. Such a position would be to assume that supply chain management *per se* is relevant and makes sense (resonates) to practitioners in construction organisations. Its adoption by other industry sectors such as the auto industry and, its popularity and support from the large repeat clients of the construction sector are considered in this thesis to fall substantially short of a convincing argument for its adoption by organisations and practitioners within the construction sector. Indeed, its legitimisation, implementation, adoption and form within organisations in the construction sector are argued in this thesis to be largely determined by knowledgeable and reflexive practitioners embedded in context.

This thesis is therefore concerned with engaging in analysis to explore practitioners' interpretations of supply chain management. These
interpretations will be used to test accepted theory regarding supply chain management and provide an explanation of how practitioners make sense of supply chain management.

The initial practical problems of the research are therefore grounded in a need to:

- Generate a theoretical understanding of supply chain management;
- Understand and explore theories sensitive to practitioners' interpretations of the content of change in context;
- Develop a broad understanding of supply chain management issues, problems and concerns within the literature;
- Test supply chain management theory against empirical evidence.

It is considered that in addressing such problems an evolving contextual understanding of supply chain management will emerge that places an emphasis on practitioners' interpretations and tests accepted supply chain management theory in a construction context.

In summary this research will address the following research problem (P1), question (Q1) and objectives (O1-O5):

**P1:** The assumptions that underpin the calls for change in the construction sector are acontextual and atheoretical. They fail to engage or resonate with the experienced reality of practitioners operating within organisations in the construction sector. Recent calls for change regarding the adoption of supply chain management in the construction sector are underpinned by these assumptions.

**Q1:** How do practitioners within construction organisations make sense of supply chain management?
O1: Explore and highlight contextual approaches for understanding managerial practice that challenge notions of the simplistic transfer and relevance of supply chain management to the construction sector
O2: Develop a broad theoretical understanding of supply chain management, key issues and concerns from organisation studies and mainstream management literature as well as the construction management literature
O3: Offer an explanation of how practitioners within construction organisations make sense of supply chain management.
O4: Compare, contrast and highlight tensions between O2 & O3.
O5 Draw out conclusions, limitations and recommendations from the research.

As part of the case study strategy the following theoretical propositions have been developed from an exploration of relevant theory covered in the thesis. These form the basis upon which literal replication is sought and generalisations made from the empirical data to the theory.

Proposition 1: Practitioners interpret and draw upon specific aspects of context that shape and are shaped by how they make sense of the content of change. Practitioners within organisations in the construction sector will interpret and draw upon specific aspects of context in bringing meaning to, and making sense of supply chain management

Proposition 2: Practitioners' interpretations of context and content contribute to an explanation of how they make sense of supply chain management. This may not necessarily resonate with theory. Indeed supply chain management theory may not make any sense at all to practitioners within organisations operating and competing in the construction sector.
The research therefore draws on Yin's (1994) analytic generalisation approach where the previously developed theoretical propositions are used as a template with which to compare the results of each case study. Cases are also carefully selected to represent the phenomenon under study – organisations in the construction sector concerned with adopting and implementing supply chain management. The figure above graphically represents the process of research and directs the reader to the various chapters of the accompanying research thesis that supports
this case study research project and the links with the original research problem, question and objectives.

B. Select Case
Strategy: contact senior executives within construction organisations that are understood to be addressing the issue of how to implement and adopt supply chain management.

C. Identify key organisational informants for study
Strategy: Introduce study overview to key senior executive acting as contact for the study and ask to be directed towards those informants instrumental in implementing and adopting supply chain management. The choice of informants will be done through a process of negotiation whereby informants will be considered central to the study if their roles are predominantly concerned with organisational objectives and not project centric. At least one representative is sought that is concerned with procurement and purchasing within the organisation.

D. Data collection
Due to the nature of the propositions, the unit of analysis and, the underlying theory used to support the propositions, the need to engage with how practitioners make sense of supply chain management is an over arching criteria in the selection of an appropriate data collection method. Data collection therefore relied on two main sources of evidence: documentation and interviews. The documentation sourced consisted of information relating to the organisations aspirations regarding managerial concepts – specifically supply chain management. For example: marketing material outlining an organisations intent to develop supply chain management; annual reports; organisational charts. This data provided broad contextual information but also an indication of the organisations aspirations for and experience of supply chain management. Semi-structured interviews allowed data to be collected that presented an opportunity to reveal how and why practitioners make sense of supply chain management. The semi-structured interviews also
allowed the use of pre-assigned codes relating to the content of the research propositions to be addressed across all interviewees within the data analysis. This therefore also took the form of an aide memoir during the interview that outlined the themes to be covered. Consent to record the interview from the informants was sought prior to recording where the anonymity of the informant and the organisation was guaranteed. The interviews were recorded onto mini-disc and subsequently fully transcribed onto computer files. These files were then loaded onto a qualitative analysis software application for the process of coding and full analysis to take place.

E. Case study questions (questions asked of researcher)

1. **What is the general background to the organisation**
   Main aim: To establish an understanding of the organisation. What does the organisation do? What markets does the organisation compete? How is the organisation structured? How big is the organisation? How specialist is the organisation? Does the organisation subcontract? Has the organisation engaged in change initiatives before and if so what are they and how successful were they?

2. **Background of interviewee**
   Main aim: To establish an understanding of interviewees and their role in the organisation. What is the history behind their career? What profession are they? How long have they been in post? What is their post and what does it entail? What do they understand the organisation to be concerned with? What are the markets that they consider the organisation to compete? And, what do they consider to be the main conditions of that market?

3. **To what extent are practitioners in the organisation aware of and understand supply chain management?**
Main aim: To explore the level of awareness and understanding of supply chain management. For any organisation, an awareness and understanding of supply chain management throughout all levels in the organisation is crucial to its successful implementation. Only through initial awareness can proactive action be taken to move in the direction of achieving supply chain management. The importance of this awareness permeating an organisation from top to bottom must not be overlooked since it not only has an impact for those involved in external relationships with suppliers and customers, but also has an impact on the internal relations between functions within a single organisation as internal suppliers and customers. In essence, it must be viewed as both an inter- and intra-organisational issue. It is also important to recognise how supply chain management is interpreted as either detraction from previous initiatives or the reinforcement of previous initiatives. In bringing meaning to supply chain management this question will also be used to support any evidence of what contextual factors influence interpretations and meaning. The source of such data is expected to be found in documentation detailing the organisations intent and purpose regarding supply chain management. Such data will also found within the interviewees responses to such questions.

4. What main aspects of context shape how respondents interpret and understand supply chain management?

Main aim: To understand what structural characteristics underpin how the implementation and adoption of supply chain management is interpreted. This question is drawn from proposition 1. In this sense, informants are treated as knowledgeable and reflexive in shaping and determining action or, in this case change. This understanding of the dominant and influential aspects of context drawn upon by practitioners informs the basis of proposition 2 that sets out to explain how practitioners make sense of supply chain management.
5. What aspects of supply chain management theory do informants draw upon in making sense of supply chain management in construction organisations?

Main aim: To gain an understanding of what aspects of the theory of supply chain management is mobilised by informants in construction organisation to making sense of supply chain management. This question is principally drawn from proposition 2. Indeed, is supply chain management something that practitioners interpret to be of any concern to the problems or context within which their organisations operate and compete. It is also not presumed that supply chain management makes sense to those practitioners rooted in construction organisations despite its frequently ascribed label of ‘best practice’. What dominant theoretical perspectives and key theoretical issues such as that outlined in chapter 4 are drawn upon by informants? The question is directed towards understanding how and why practitioners rooted within construction organisations make sense of some of the strands of debate flowing from the perspectives on supply chain management and key aspects. For example, is supply chain management made sense of as a purchasing or a logistics issue?

6. What meaning do informants place on supply chain management within construction organisations

Main aim: To understand what supply chain management means to practitioners in construction organisations and how such meaning is derived. This question is also principally drawn from proposition 2. Thus, it is underpinned by a necessity to understand what meaning, and how, practitioners attribute to managerial concepts. It draws in aspects of New’s (1997) concern regarding views of supply chain management that are either normative or descriptive (“the is and the ought”). To what extent practitioners prescribe or describe models, attributes or constructs of supply chain management within the context of how their organisations adopt(ed), adapt(ed) and/or
implement(ed) this concept is of interest. How these descriptions or prescriptions are, or may be, legitimised is also of concern.

Semi-structured Interview aide memoir (topics to be addressed by informant)

1. Ascertain details regarding the organisation
   c. Structure of organisation
   d. Size of organisation – Employees? Turnover?
   e. Competes in what sector? Construction only? Manufacturing?
   f. Explore history
2. Interviewee's role in the organisation
3. Awareness and understanding of supply chain management
4. Strategic or operational
5. Commitment and leadership to supply chain management
6. What is a supply chain?
7. Competing supply chains
8. Internal relationships within the organisation
9. Relationships with clients
10. Relationships with suppliers
11. Contextual factors relating to the understanding, implementation and meaning placed upon supply chain management
12. Interdependency
13. Training
14. Supply chain management tools and technique
15. Documents supporting supply chain management